



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7  
901 NORTH 5TH STREET  
KANSAS CITY, KANSAS 66101

AUG 28 2009

MEMORANDUM

SUBJECT: Request for Concurrence of the Five-Year Review Report  
Jefferson Barracks Post Dump

FROM: Clint Sperry, Remedial Project Manager *[Signature]*  
Missouri/Kansas Remedial Branch

THRU: Diane Easley, Chief  
Missouri/Kansas Remedial Branch

TO: Cecilia Tapia, Director  
Superfund Division

Located below for your signature is the first five year review for the Jefferson Barracks Post Dump site in St. Louis, Missouri. The U.S. Army Corps of Engineers (USACE) conducted the five year review pursuant to a Memorandum of Agreement (MOA) with the Missouri Air National Guard. USACE is responsible for cleanup actions at Formerly Used Defense Sites under the Defense Environmental Restoration Act. The selected remedy for the Jefferson Barracks Dump site includes the installation of riprap along the shoreline of the Mississippi River in areas most suspected of the presence of buried unexploded ordnance and the installation of land use controls.

The first five year review was originally scheduled for 2003, which would have been five years after the contractor began the installation of the riprap, but a discovery of a void area in the riprap required additional riprap in this area. Once this was completed, a new five year review date was established for 2008. However, due to a budgetary planning oversight, the review was moved to 2009.

Over the past five years, it has been determined that the remedy is operating in accordance with the requirements found in the 1998 Action Memorandum and currently protects human health and the environment. The oversight responsibilities of USACE are also being performed in accordance with the 2001 MOA. The riprap cover and the enforcement of a restrictive deed on the property are functioning as designed and are expected to remain protective of human health and the environment.

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Superfund

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Attachment

*[Signature]*  
Cecilia Tapia, Director  
Superfund Division

8/28/09  
Date

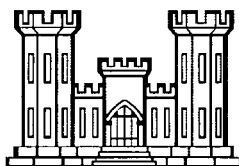
# Five-Year Review Report

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AUG 05 2009

SUPERFUND DIVISION

**First Five-Year Review Report  
For  
The Former Jefferson Barracks Post Dumping  
Grounds  
St. Louis County, Missouri  
Defense Environmental Restoration Program-  
Formerly Used Defense Site (DERP-FUDS)  
Site #B07MO0143**



**August 2009**

**PREPARED BY:**

**U.S. Army Corps of Engineers  
Kansas City District  
Kansas City, Missouri**

**Approved by:**

*Scott E. Young*

**Date:**

*3 Aug 09*

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## List of Acronyms

AFB	Air Force Base
ARARs	applicable or relevant and appropriate requirements
ASR	Archives Search Report
CEHNC	U.S. Army Engineering and Support Center, Huntsville (Huntsville Center)
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CFR	Code of Federal Regulations
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
FUDS	Formerly Used Defense Site
HTW	Hazardous and Toxic Waste
INPR	Inventory Project Report
IRA	Interim Removal Action
JBANG	Jefferson Barracks Air National Guard
LTM	Long-Term Management
LUC	Land Use Control
MDNR	Missouri Department of Natural Resources
mm	millimeter
MOA	Memorandum of Agreement
MOANG	Missouri Air National Guard
MSD	Metropolitan Sewer District
NCP	National Contingency Plan
NOFA	No Further Action
NPL	National Priority List
O&M	Operations and Maintenance
OE	Ordnance and Explosives

QAR	Quality Assurance Report
RAO	Remedial Action Objective
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UXO	unexploded ordnance
VA	Veterans Administration
WWI	World War I

## **Executive Summary**

The U.S. Army Corps of Engineers (USACE) has conducted the first five-year review of the former Jefferson Barracks Post Dumping Grounds in St. Louis County, Missouri, pursuant to a Memorandum of Agreement (MOA) between the USACE and the Missouri Air National Guard (MOANG). Under the Defense Environmental Restoration Act, the USACE is responsible for cleanup actions at Formerly Used Defense Sites (FUDS) on behalf of the Department of Defense (DoD). Furthermore, the National Contingency Plan (NCP) requires that a five-year review be performed to determine whether the remedial actions implemented at the former Jefferson Barracks Post Dumping Grounds site remain protective of human health and the environment. This five-year review is required because unexploded ordnance remains on-site thereby preventing unlimited use and unrestricted exposure. The methods, findings, and conclusions of the review are documented in this report. In addition, this report summarizes issues identified during the review and includes recommendations and follow-up actions for them.

The selected remedy for the former Jefferson Barracks Post Dumping Grounds site in St. Louis County, Missouri includes land use controls (LUCs) consisting of the installation of riprap (riprap is a material consisting of stone or crushed rock, which is placed along shorelines to protect against erosion) to the Mississippi River shoreline area most suspected of the presence of buried unexploded ordnance (UXO) items to prevent surface exposure from future river erosion; posting of warning signs; and enforcement of a deed restriction in the form of a restrictive covenant. The site achieved construction completion with the U.S. Environmental Protection Agency's (USEPA) acceptance of a close out letter dated May 20, 2003 (Attachment 1). Although the first five-year review was originally scheduled for 2003, which would have been five years after the contractor began riprap installation work, the discovery of a riprap void area in 2003 and the subsequent installation of additional riprap on this area, resulted in a new five-year review action date of 2008. However, the completion of this review in 2009 and not 2008 is the result of a budgetary planning oversight. The second five-year review will be budgeted for FY2014. The USEPA closed out the project in September 2003 and officially entered the project into USEPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database as a long-term monitored site, under CERCLIS ID No. MO0002222883.

The assessment of this five-year review found that the remedy was implemented in accordance with the requirements found in the 1998 Action Memorandum. The remedy, consisting of a riprap cover on the former post dumping grounds and the enforcement of a deed restriction on the property, is functioning as designed and is expected to continue to be protective of human health and the environment by preventing future exposure, specifically unauthorized public access, to potential UXO. Additionally, the five-year review confirmed that oversight responsibilities are being performed in accordance with the 2001 Memorandum of Agreement (MOA) (Attachment 2) between USACE and the MOANG. The MOA defines the relationship, responsibilities and general objectives under which the MOANG and the USACE achieve maintenance of warning signs and riprap.



## Five-Year Review Summary Form

SITE IDENTIFICATION				
<b>Site Name:</b> Former Jefferson Barracks Post Dumping Grounds				
<b>FUDS Project Number:</b> B07MO0143				
<b>Region:</b> 7	<b>State:</b> MO	<b>County:</b> St. Louis		
SITE STATUS				
<b>NPL status:</b> Non-NPL Site				
<b>Remediation status:</b> Complete				
<b>Multiple OUs?</b> NO	<b>Construction completion date:</b> 05/20/2003			
<b>Has site been put into reuse?</b> NO				
REVIEW STATUS				
<b>Lead agency:</b> U.S. Army Corps of Engineers, Kansas City District				
<b>Author name:</b> Josephine Newton-Lund				
<b>Author title:</b> Senior Project Manager	<b>Author affiliation:</b> US Army Corps of Engineers, Kansas City District			
<b>Review period:</b> 04/09/2008 to 06/30/2009				
<b>Dates of site inspection:</b> 12/02/2008				
<b>Type of review:</b> Policy (Non-NPL Remedial Action Site)				
<b>Review number:</b> 1 (first)				
<b>Triggering action:</b> Actual RA Onsite Construction (Riprap installation on a void area discovered in 2003)				
<b>Triggering action date:</b> 04/09/2003				
<b>Due date (five years after triggering action date):</b> 04/09/2008				

## Five-Year Review Summary Form *Continued*

### **Issues:**

During the most recent site inspection conducted on 12/2/2008 by USACE, MOANG, Missouri Department of Natural Resources (MDNR) and Environmental Protection Agency (USEPA) Region 7, the following items were observed:

- A severely damaged warning sign (Attachment 3).
- Minor undercutting of riprap consisting of small stone displacement (Attachment 4).

### **Recommendations and Follow-up Actions:**

The MOANG replaced the damaged warning sign on February 3, 2009. The MOANG and USACE will continue to monitor the condition of all warning signs during annual site inspections.

Although the area's minor undercutting appears to be the result of a few displaced small stones, the MOANG and USACE will closely monitor the potential for future undercutting of riprap along the Mississippi River shoreline during visual inspections at low water periods in addition to scheduled annual site inspections.

### **Protectiveness Statement:**

All immediate threats at the site have been addressed, and the remedy remains protective of human health and the environment as demonstrated by the observance that the riprap installed during construction remains in-place and has precluded any UXO from being exposed due to river erosion. A follow-up survey will be conducted in the late fall/early winter of the 2009 calendar year when water levels in the river are historically at their lowest elevation to ensure the riprap stabilization is intact along the entire face of the river bank.

# I. Introduction

The purpose of the Five-year Review is to determine whether the remedy at the former Jefferson Barracks Post Dumping Grounds site is protective of human health and the environment. The methods, findings, and conclusions of the reviews are documented in Five-Year Review Reports. In addition, Five-Year Review Reports identify issues found during the review, if any, and identify recommendations to address them.

As the lead agency for the former Jefferson Barracks Dumping Grounds site, the U.S. Army Corps of Engineers, Kansas City District (USACE-KC) prepared this Five-Year Review Report pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) §121(c) and the NCP. USACE is required to follow CERCLA and the NCP for response actions that address UXO based on the provisions of 10 USC § 2701 and the DoD “Management Guidance for the Defense Environmental Restoration Program”. Although the former Jefferson Barracks Post Dumping Grounds Site is not on the National Priorities List (NPL), the USACE follows the CERCLA process. CERCLA § 121(c) states the following:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The USEPA interpreted this requirement further in the NCP at 40 Code of Federal Regulations (CFR) 300 [specifically 40 CFR 300.430(f)(4)(ii)], which states the following:

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The five-year period covered by this review is from April 2003 through April 2008. This is the first five-year review conducted for the former Jefferson Barracks Dumping Grounds in St. Louis County, Missouri. This review was conducted from April 2008 through June 2009 and covers the period from April 2003 through April 2008.

The triggering action for this first five-year review was the installation of additional riprap on a void area discovered during a 2003 site inspection. The Five-Year Review is required due to the fact that military munitions remain buried at the site which would result in an unacceptable health and safety risk to the public.

## II. Site Chronology

Table 1 below lists the chronology of events at the former Jefferson Barracks Post Dumping Grounds site.

<b>TABLE 1</b> <b>Chronology of Site Events</b>	
<b>Event</b>	<b>Date</b>
Jefferson Barracks established as a military training post for U.S Army infantry units	1826
Jefferson Barracks declared surplus	1946
Jefferson Barracks' riverfront used as a dump site	1826 - 1950
Portion of Jefferson Barracks land transferred to the state of Missouri for use in training and maintaining National Guard components of armed forces	1950
State of Missouri leases Jefferson Barracks property to Federal Government for long term (Effective until year 2023) in order for Air Force to provide funds for construction and maintenance of facilities	1970
DERP-FUDS Inventory Project Report (INPR)- USACE-Kansas City-Hazardous and Toxic Waste (HTW) Project Recommendation	1990
DERP-FUDS Archives Search Report (ASR)- USACE-KC	1994

Environmental Baseline Survey- Missouri Air National Guard (MOANG)	1996
Site visit by USACE-KC and Huntsville Center (CEHNC)- 14 WWI-Era grenades discovered. An Explosive Ordnance Disposal (EOD) team from Fort Leonard Wood, MO were dispatched to safely detonate items on site.	7-9 February 1996
Site visit by USACE-KC and St. Louis Districts and MOANG to check archeological issues related to ordnance disposal- An unexploded WWI-Era 3-inch Stokes mortar shell discovered. An EOD team from Scott Air Force Base (AFB), Illinois was dispatched to safely detonate the item on site.	11 September 1996
Storm sewer construction (outfall upgrade) conducted by MOANG in the northern portion of the site uncovered an expended WWI French-rifle grenade.	1997
Interim Removal Action (IRA) for UXO conducted by USACE- Huntsville Center- 209 Ordnance and Explosives (OE) items recovered. 181 items were small arms and the remainder were rifle and hand grenades, fuzes and flash tubes. All items were detonated on site.	1997
1,363 OE items recovered and destroyed on site by EOD teams in two-year period- Reported by MOANG	1996-1997
Engineering Evaluation/Cost Analysis- USACE-Huntsville Center	1998
Action Memorandum- USACE- Huntsville Center	1998
Installation of revetment (riprap) and warning signs	1999
MOA between USACE-KC and St. Louis Districts and MOANG Signed	2001

Additional riprap installed due to discovery of a 200 feet by 850 feet exposed area during a low-water site inspection	2003
USEPA closes out project site in CERCLIS	2003
Annual site inspections of riprap and warning signs as part of LTM	2003-Present
Restrictive Covenant and Grant of Easement filed in St. Louis County, MO by MOANG (Deed Restriction) in accordance with MOA (Attachment 5)	2004
St. Louis Metropolitan Sewer District (MSD) replaces sewer line and outfall located on southern portion of riprap. Sewer project named, <i>CSO-Interceptor and Outfall Modification (J.B. Outfall L152)</i> . No evidence of military munitions observed by USACE safety specialist overseeing work. Although a limited amount of riprap was displaced during this work, MSD replaced the riprap in full.	2008

### **III. Background**

#### **Physical Characteristics**

The former Jefferson Barracks Dumping Grounds is located approximately 12 miles south of the city of St. Louis, Missouri. The Site is approximately 10-12 acres and is located east of the Union Pacific railroad tracks, adjacent to the Mississippi River (Attachment 6). The former Jefferson Barracks Dumping Grounds consists of two general areas: a topographically higher wooded escarpment on the western portion and a lower beach area on the eastern portion. The extent of the beach area varies in response to the continual variations in the Mississippi River shoreline.

The Site is located within the boundary of the Dissected Till Plain section of the Central Lowland province. The topography of the area, with the exception of the floodplains adjacent to the major rivers, varies from gently rolling to rugged, with the greatest relief occurring in the western portion of the section and along the bluffs of the river valleys.

The eastern site boundary is adjacent to the Mississippi River. However, only the immediate area (approximately 5 percent of the total area) is prone to the river's flooding. The majority of the Site is situated atop an escarpment, nearly 100 feet above the Mississippi riverbank. Surface drainage from the site generally flows eastward toward the river via overland flow and shallow swales.

#### **Land and Resource Use**

The approximately 1,294 acres of the former Jefferson Barracks is occupied by two St. Louis County parks (Jefferson Barracks Historic and Sylvan Springs), a Veteran's Administration (VA) Hospital, a National Cemetery, the Jefferson Barracks Air National Guard Station (JBANG), a public school, a Catholic church and school, manufacturing/warehouse facility, and residential homes and apartments.



The JBANG, where the former Jefferson Barracks Post Dumping Grounds is located, occupies approximately 135 acres in the east-central portion of the former Jefferson Barracks. The Station maintains administrative offices, storage facilities, Air National Guard and Army Reserve training facilities, and radar equipment and support facilities.

The JBANG has approximately 90 full-time employees and 370 reservists. Flight operations for the Air National Guard are conducted at the Air National Guard Base at Lambert Field in North St. Louis County.

## **History of Contamination**

The former Jefferson Barracks was established on approximately 1,702 acres in 1826 as a garrison for the U.S. Army infantry units. The post was utilized for various U.S. military training activities from 1826 to 1946, except during the period from 1871 to 1894, when the site was operated by the Ordnance Department as the St. Louis Arsenal and was also used as a recruiting station for cavalry training. The facility served as a demobilization center for overseas troops during World War I (WW I). By 1890, most of the arsenal storage (powder, arms, and munitions) had been moved to the Rock Island Arsenal in Illinois. In 1920, the post became the home of the U.S. Army 6<sup>th</sup> Infantry, which conducted training with both conventional and chemical munitions. Rifle, submachine gun, and dummy grenade practice was conducted at ranges located in the southern portion of the base.

Records from the early 1900's indicate that rifle grenade training took place on the Old Cavalry Drill Field. It is suspected that this field is now occupied by the VA Hospital. The majority of munitions and field training took place in a large wooded area in the southwest portion of the post following WW I. Additional training activities included night maneuvers, camouflage school, and artillery placement. Documents also indicate that instruction in the use of 37 millimeter (mm) guns and Stokes mortars occurred on these ranges.

From 1826 to 1946, portions of the former Jefferson Barracks riverfront property were possibly used for various waste disposal activities. The area is now referred to as the former Jefferson Barracks Post Dumping Grounds and has been the location of both historical artifact recovery and military munitions clearance activities. Due to the presence of historical artifacts, the former Jefferson Barracks Post Dumping Grounds is designated as a national archaeological site, but it does not meet the criteria for National Register of Historic Places status. Based on a 1996 survey of riverfront area artifacts, artifacts dating from 1880-1940 (primarily time periods following the Spanish-American War and WW I) dominate the area. Dumping appears to have been primarily confined to the Mississippi River shore. Most of the material that was dumped in the riverfront area consists of general refuse and construction or building materials.

Dump items include mess hall plateware and china; medical ceramicware and glassware; belt buckles; military uniform buttons and clasps; and large amounts of horseshoes, muleshoes and building/construction debris, including nails, bolts, and various metal scraps. Recovered military munitions items in the former Jefferson Barracks Dumping Grounds have primarily been WW I-era mortar shells and rifle grenades and are assumed to have been disposed of as excess after the war.

## **Initial Response**

In 1997, the USACE-KC District and Huntsville Center (USACE Center of Ordnance Expertise) initiated a non-time critical removal action to address the remaining military munitions buried at the former Jefferson Barracks Dumping Grounds. Using information obtained from the 1994 ASR and 1997 IRA, USACE prepared an Engineering Evaluation/Cost Analysis (EE/CA) and an action memorandum to support the non-time critical removal action.

The EE/CA proposed three response action alternatives: 1) No Further Action (NOFA); 2) Institutional Controls/Risk Management and 3) 4-Foot Clearance (removal of ordnance and explosives to a depth of 4 feet below ground surface). Alternative 2 was selected as the preferred remedy based on the selection criteria of effectiveness, implementability and cost. Based on the unique site conditions resulting from its proximity to the Mississippi River, the former Jefferson Barracks Post Dumping Grounds would be effectively served by Alternative 2 with the installation of riprap and posting of warning signs than Alternative 1 (NOFA) or Alternative 3 (4-Foot Clearance).

The action memorandum authorized the expenditure of funds for the installation of riprap to the shoreline area most suspected for the presence of buried UXO and military munitions items to prevent surface exposure from future river erosion. In addition, the action memorandum authorized the expenditure of funds for the posting of warning signs, preparation of a MOA between the USACE and MOANG and the creation of a deed restriction.

In 1999, USACE installed riprap and posted warning signs. In 2001, a MOA between USACE-KC and MOANG was signed by both parties. Due to the discovery of an exposed area during a 2003 site inspection, additional riprap was installed in 2003. In 2004, a restrictive covenant (deed restriction) on the riverfront property was filed in St. Louis County, Missouri.

## **Basis for Taking Action**

Periodic UXO discoveries at the former post dumping area by MOANG and USACE in addition to results from previous investigations that revealed UXO contamination present in the former Jefferson Barracks Dumping Grounds area, served as the basis for taking action at this Site. Although the area of concern is officially closed to the public, the lack of physical controls (i.e. fencing) enabled public access. The suspected remaining UXO presented an imminent and substantial endangerment to public safety.

## **IV. Remedial Actions**

### **Remedy Selection**

The Action Memorandum for the former Jefferson Barracks Post Dumping Grounds was signed on October 23, 1998. The selection criteria of the Action Memorandum consisted of the following:

- Effectiveness- Includes the protection of human safety and health and the environment, compliance with applicable or relevant and appropriate requirements (ARARs), long-term effectiveness, and short-term effectiveness.
- Implementability- Includes technical and administrative feasibility, and availability of services and materials.
- Cost.

The purpose of the selected remedy was to address UXO contamination associated with the former Jefferson Barracks Post Dumping Grounds. UXO contamination at the former Jefferson Barracks Post Dumping Grounds consisted of buried WW I-era mortar shells and rifle grenades. The remedy consisted of the following:

- Posting warning signs
- Installation of riprap to the shoreline area most suspected for the presence of buried UXO and military munitions items to prevent surface exposure from future river erosion.
- Providing a MOA between the USACE and MOANG
- Creating or enforcing deed restrictions

### **Remedy Implementation**

An EE/CA was completed by the USACE in 1998 and an Action Memorandum was signed in the same year. Implementation of the remedy began in 1999 with the installment of riprap and warning signs. Approximately 15,000 tons of USACE Graded Stone A riprap was installed on approximately 10 acres of shoreline. The area is 200 feet wide (west to east)

by 850 feet long (north to south). This location is between the Union Pacific railroad tracks and the Mississippi River. A 2.5-foot minimum layer of riprap was installed. Installment of the riprap was completed in 2000. In addition, twelve warning signs were installed in and around the former Jefferson Barracks Dumping Grounds. The signs were installed along access routes along the western edge of the wooded area and in the beach area. The following warning notice text is depicted on the signs:

**DANGER**  
**UNEXPLODED ORDNANCE KEEP OUT**  
**U.S. Air Force Installation**  
**NO UNAUTHORIZED ENTRY**  
**GROUND INTRUSIVE ACTIVITIES PROHIBITED**  
**For information call Jefferson Barracks ANG**  
**Environmental Office (314) 527-8369**

In 2001, a MOA was signed by MOANG and USACE. The purpose of the MOA is to define the relationship, responsibilities and general objectives under which the MOANG and the USACE achieve maintenance of warning signs and revetment (riprap).

In 2003, extremely low Mississippi River water levels allowed MOANG officials to inspect the lower portion of riprap previously covered by water, since the 1999 riprap construction. The inspection resulted in the discovery of areas void of riprap, including evidence of former dump site debris, such as mule shoes and Quartermaster Corps china. A topographic survey was subsequently performed by a USACE-St. Louis District survey contractor. In April 2003, additional riprap in the amount of 7,400 tons was placed on the previously discovered void areas.

In accordance with the terms of the MOA, MOANG filed a restrictive covenant and grant of easement (deed restriction) with St. Louis County on October 6, 2004. The purpose of the deed restriction is to bind the property owner (State of Missouri, represented by the Office of the Adjutant General, Missouri National Guard) to the terms of the MOA, and to provide notice to all future owners of the following:

- UXO and/or military munitions located on the property;
- the continuing obligation of the property owner to notify the Department of Defense (DoD) if any grounds are or will be disturbed in any way or if UXO and/or military munitions become exposed;

- the requirement to provide notice of land use restrictions if the property is transferred, leased, or restrictions modified; and
- the requirement to provide notification prior to construction on the property.”

## System Operation and Maintenance

In accordance with the terms of the MOA, which defines operations and maintenance (O&M) responsibilities, annual site inspections are conducted during late fall/early winter when Mississippi River water levels are historically low. The purpose of the annual site inspections is to observe the condition of the warning signs and the condition and effectiveness of the riprap cover. Six site inspections have been performed since 2003. Site inspection participants include representatives from MDNR, USEPA Region 7, Metropolitan Sewer District (MSD), MOANG and USACE-Kansas City and St. Louis Districts. Because upgrades to sewer outfalls and lines have occurred near and on the former Jefferson Barracks Dumping Grounds, MSD routinely participates in these site inspections. Furthermore, MOANG conducts an annual inspection of riprap and warning signs in the summer after Mississippi River water levels reduce to normal levels after spring flooding.

Table 1 below provides a yearly summary of the O&M costs. These include labor and travel costs for USACE-Kansas City staff to participate in site inspections, labor costs for USACE-St. Louis District staff to participate in site inspections and labor costs for the preparation of annual quality assurance reports.

**Table 2: O&M Costs**

<b>Fiscal Year</b>	<b>Cost (rounded to nearest \$1,000)</b>
2003	\$16,000
2004	\$10,000
2005	\$12,500
2006	\$12,500
2007	\$12,500
2008	\$12,500

## **V. Progress Since the Last Five-Year Review**

This was the first five-year review for the site.

## **VI. Five-Year Review Process**

### **Administrative Components**

The Five-Year Review was lead by Josephine Newton-Lund, USACE-Kansas City project manager for this site. The review was conducted between April 2008 and the signature date of this report. The review included a site inspection, document review, community involvement, interviews, and report development and review.

### **Community Involvement**

A newspaper advertisement was placed in the *South County Journal* on April 22, 2009 notifying the public of the start of the Five-Year Review process. Upon completion of this report, a notice will be placed in the newspaper announcing the completion of the Five-Year Review and its availability at the MOANG Environmental Management Office.

### **Document Review**

This Five-Year Review included a review of all relevant documents including decision documents, site investigation documents, and O&M reports.

### **Data Review**

Site inspections have been conducted since 2003. Upon completion of these inspections, quality assurance reports, which summarize the findings from the site inspections, are submitted to MDNR and USEPA. As part of the five-year review evaluation, USEPA noted that an inspection checklist prescribing the inspection process was not developed for the annual inspections. An inspection checklist will be developed by USACE prior to the next annual inspection of riprap and warning signs and the second five-year review. Observations from a review of the quality assurance reports are summarized below:

## Riprap

Beginning with the first inspection conducted on December 8, 2003, and during subsequent inspections, there has been no observation of UXO or military munitions debris of any kind on the riprap. The riprap cover has been observed to be in good condition. Moreover, siltation on top of the riprap, which began to form not long after the majority of riprap was installed in 1999, has increased and now includes some tree growth on top of the riprap. In addition, the most recent hydrographic survey conducted on March 11, 2009 and topographic survey conducted at the site on April 28 and 29, 2009 indicated no vertical or horizontal changes to the riprap based on a comparison of survey data obtained in 2003. A digital terrain model was created from the topographic survey data and compared to the previous model. For the comparison, cross-sections were developed for both surfaces on 100 foot intervals. No differences were found in the models, which indicate no movement of riprap. In addition, the cross-sections revealed that in most cases material had accumulated above the 2003 survey level. 2009 survey cross-section survey data is included as Attachment 7 and a survey map is included as Attachment 8. Because the survey was not conducted at the Site during low water conditions, a follow-up survey will be conducted during the late fall/early winter of the 2009 calendar year when water levels are historically at their lowest and as part of the Site's annual inspections. In addition, inspections by boat are conducted annually on the Mississippi River by St. Louis District as part of their Civil Works program requirements. The Jefferson Barracks riprap site is included in St. Louis District's annual Mississippi River inspection.

## Warning Signs

Warning signs have generally been in good condition since their installation in 1999. However, there was one instance in 2002 when a sign was ripped from the posts by a large piece of debris during a flood event. The post was later replaced on higher ground by the MOANG that same year. In October 2008, a sign was severely damaged by brush clearing equipment during sewer line replacement work by MSD. The sign was replaced by MOANG on February 3, 2009.



## **Site Inspection**

Six site inspections have been conducted since 2003 when additional riprap was installed to cover a void area. The most recent annual site inspection was conducted on December 2, 2008. Site inspection participants included representatives from MDNR, USEPA Region 7, MOANG, MSD and USACE Kansas City and St. Louis Districts. The purpose of the inspections is to assess the protectiveness of the remedy, which includes the integrity of the riprap cover and the condition of the warning signs.

No significant issues have been identified regarding the riprap cover since the site inspections began in December 2003. Examinations of the riprap during several inspections revealed that significant siltation has occurred on the lower portion and some tree growth on the upper portion. However, siltation and tree growth are beneficial as they contribute to the protectiveness of the remedy by increasing the depth of the riprap cover. Although no significant degradation or undercutting of the riprap has been observed over the years, some minor undercutting of riprap was observed along the shoreline located in the northern portion during the December 2008 inspection. As noted previously, the MOANG and USACE will closely monitor the potential for future undercutting of riprap along the Mississippi River shoreline during low water periods in addition to scheduled annual site inspections.

## **Interviews**

Interviews were not conducted because annual site inspections and conversations with stakeholders, specifically MOANG and MSD, and the regulators, MDNR and USEPA Region 7, have taken place routinely over the past five years. However, based on a recommendation by MDNR as part of this five-year review, USACE will conduct interviews of stakeholders, including local citizens, at the September 11, 2009 Jefferson Barracks Community Council meeting. The Council meetings, which are held on odd numbered months, are attended by approximately 30 members who represent various arms of Jefferson Barracks including the base, the cemetery, the veteran's hospital and the county park.

## VII. Technical Assessment

### **Question A: Is the remedy functioning as intended by the decision documents?**

The answer to this question addresses remedial action performance, early indicators of potential issues, O&M issues, and implementation of institutional controls. The items are discussed as follows:

The review of survey data and the results of the annual inspections indicate that the remedy is functioning as intended by the requirements in the 1998 Action Memorandum. The selected remedy for this Site as identified in the Action Memorandum included a variety of site-specific actions to protect human health and the environment. The site-specific actions included the posting of warning signs, installation of riprap to the shoreline area most suspected of buried UXO, a MOA outlining MOANG and USACE responsibilities related to the maintenance of the warning signs and riprap and creating and enforcing deed restrictions. The riprap cover and warning signs have achieved the remedy selection criteria outlined in Section IV to protect human health and the environment. Site inspections for the past five years have resulted in the observance of no UXO or military munitions debris. Additionally, the riprap, which consists of large chunks of rock, has prevented trespassers and artifact hunters from digging into the former dump area. The effectiveness of these land use controls has prevented exposure to military munitions buried at this site. Moreover, the results of the hydrographic survey conducted on March 11, 2009 and topographic survey conducted on April 28 and 29, 2009 indicate that the riprap has not degraded nor has it moved vertically or horizontally since installation in 1999 and 2003. This is based on a comparison of survey data obtained in 2003. As stated previously, a digital terrain model was created from the topographic survey data and compared to the previous model. For the comparison, cross-sections were developed for both surfaces on 100 foot intervals. No differences were found in the models, which indicate no movement of riprap. Additionally, the cross-sections revealed that in most cases material had accumulated above the 2003 survey level. However, because of the high water level conditions that existed during the topographic survey, a follow-on survey will be conducted in the late fall/early winter of the 2009 calendar year when water levels are historically lowest. Inspection and maintenance of the riprap and warning signs is occurring with the primary issue being damage to warning signs during flooding events and/or brush clearing for sewer line work. Damaged warning signs are replaced by MOANG.

Additionally, minor undercutting of riprap, which was observed during the most recent inspection in December 2008, will be monitored for evidence of post dump items by MOANG and USACE during visual inspections. However, the undercutting appears to be the result of a few displaced small stones.

The deed restriction that has been in place since 2004 has also contributed to the protection of human health and the environment by providing notice to all future owners that UXO and/or military munitions are located on the property and requiring MOANG to continue its obligation to notify the USACE if the area will be disturbed in any way or if UXO and/or military munitions become exposed. Furthermore, the deed restriction provides notice to a future property owner of the presence of potential UXO and military munitions if the property is transferred, leased, or restrictions modified.

**Question B: Is the selection criteria used at the time of the remedy still valid?**

The selection criteria presented in the 1998 Action Memorandum were reviewed to determine their continuing validity and the results are discussed below.

The selection criteria of effectiveness, implementability and cost for this Site are outlined in Section IV. Although the effectiveness criteria include compliance with ARARs, no ARARs were identified during the development of the EE/CA. The remedy which consists primarily of a riprap cover, continues to provide long-term protection from the threat of UXO and/or military munitions exposure to the public by preventing future exposure, specifically unauthorized public access, to potential UXO. Moreover, the other remedy components that include warning signs and the enforcement of a deed restriction have also contributed to the prevention of UXO exposure. Warning signs throughout the Site notify trespassers of the potential UXO danger and the deed restriction, which has been in place since 2004, provides notification of UXO dangers to future property owners.

**Question C: Has any other information come to light that could call into question the protectiveness of the remedy?**

There is no other information that calls into question the protectiveness of the remedy.

## Technical Assessment Summary

According to the survey data and site inspections, the remedy is functioning as intended by the Action Memorandum. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

## VIII. Issues

An issue that affects the protectiveness of the remedy for the former Jefferson Barracks Dumping Grounds site and items of concern are presented in Table 3. Corresponding recommendations and follow-up actions are included in Table 4.

**Table 3- Protectiveness Issue and Items of Concern**

<b>Issue</b>	<b>Currently Affects Protectiveness (Y/N)</b>	<b>Affects Future Protectiveness (Y/N)</b>
Severely damaged warning sign	N	N
Minor undercutting of riprap near shoreline	N	Y
Inspection checklist not developed	N	N
Topographic survey conducted when Mississippi River levels were high	N	N

## IX. Recommendations and Follow-Up Actions

**Table 4- Recommendations and Follow-Up Actions**

Issue	Recommendations/Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Severely damaged warning sign	Replace the damaged warning sign. Continue to monitor the condition of all warning signs during annual site inspections.	MOANG	MDNR and USEPA Region 7	12/31/09	N	N
Minor undercutting of riprap near shoreline	Closely monitor the potential for future undercutting of riprap along the Mississippi River shoreline during low water periods in addition to scheduled annual site inspections.	USACE and MOANG	MDNR and USEPA Region 7	12/31/09	N	Y
Inspection checklist not developed	Develop an inspection checklist prior to next annual inspection of riprap and warning signs and second five-year review	USACE	MDNR and USEPA	11/15/09	N	N
Topographic survey conducted when Mississippi River levels were high	Perform follow-up survey in late fall/early winter of the 2009 calendar year when river levels are historically at their lowest.	USACE	MDNR and USEPA Region 7	12/31/09	N	N

## **X. Protectiveness Statement**

The remedy is expected to be protective of human health and the environment through the following actions that include LUCs, which consist of riprap cover on the former post dumping grounds to prevent surface exposure of potential UXO and military munitions; posting of warning signs in and near the former post dumping grounds; and enforcement of the deed restriction which provides notice to all future land owners of the hazards of potential UXO and military munitions on the property. All immediate threats at the site have been addressed through the implementation of the above LUCs. In addition, the remedy is protective of human health and the environment as demonstrated by no observance of UXO since construction complete. Furthermore, a recent hydrographic survey conducted on March 11, 2009 and topographic survey conducted at the site on April 28 and 29, 2009 indicated no vertical or horizontal changes to the riprap based on a comparison of survey data obtained in 2002 and 2003.

Long-term protectiveness of the remedial action will be verified by the continuation of annual inspections of the riprap and warning signs. In addition to the annual inspections, the riprap will be inspected during periodic low water periods to monitor any undercutting along the shoreline areas that could result in exposed areas.

## **XII. Next Review**

The next five-year review for the former Jefferson Barracks Post Dumping Grounds Site is required by June 2014, five years from the date of this review.

## Attachment 1

May 20, 2003

Environmental Branch  
Environmental Section B

Ms. Diana Bailey  
Environmental Protection Agency Region VII  
SUPR/FFSE  
901 North 5<sup>th</sup> Street  
Kansas City, Kansas 66101

Subject: Former Jefferson Barracks Post Dumping Grounds Revetment  
(Riprap) Project, St. Louis, Missouri, Project Close Out.

Dear Ms. Bailey:

Reference is made to voice mail and email messages from you dated May 12, 2003, in which you approve the acceptance of a close out letter from the Kansas City District. In your email message, you recommend a list of items that EPA would like included in this close out letter. The following paragraphs are intended to satisfy EPA's recommendations by providing details of last month's installation of additional riprap and clarification of responsibilities regarding this project's Memorandum of Agreement (MOA):

On April 9, 2003, St. Louis District contractor, Luhr Brothers of Columbia, Illinois, mobilized to the site to place riprap on void areas discovered during low water inspections in December 2002 and January 2003 by Missouri Air National Guard (MOANG) staff. Riprap placement was completed on April 11, 2003. A total of 7,386 tons (5 barge loads) of riprap was installed. The contractor placed a blanket of Graded Stone A riprap with a minimum thickness of 30 inches. (See Attachment A [As-built Drawing] and Attachment B [Marked Up Topographic and Planimetric Survey])

In accordance with this project's MOA, dated 7 August 2001, the MOANG will perform inspections of any degradation to warning signs and/or revetment at least twice a year, particularly at low water periods. Annual inspections will begin the first quarter of Fiscal Year(FY) 2004 (November-December 2003). Additionally, the St. Louis District is responsible for the inspection of revetment once a year by boat or aerial methods as part of normal river maintenance operations.

Subject: Former Jefferson Barracks Post Dumping Grounds Revetment  
(Riprap) Project, St. Louis, Missouri, Project Close Out.

Also in accordance with this project's MOA, the Kansas City District will ensure the coordination and performance of a five-year review that will include a complete survey of the revetment area to determine if any actions are necessary to restore the site to "as-built" conditions. An initial five-year review will be programmed for first quarter FY09 (November-December 2008) during what will be an anticipated low water period.

If you have any questions concerning the above matter or would like to discuss further, please do not hesitate to call me at 816-983-3912 or email at [Josephine.M.Newton-Lund@usace.army.mil](mailto:Josephine.M.Newton-Lund@usace.army.mil).

Sincerely,

Josephine Newton-Lund  
Environmental Protection Specialist

Copies Furnished:  
MOANG (Art Schuermann)  
MDNR (Ray Strebler)  
CEMVS-PM-F (Tamara Atchley) via email  
CEMVS-ED-P (Hank Counts) via email  
CENWK-PM-ED (John Vento) via email  
CENWK-EC-EB (Ed Bristow) via email



## **Attachment 2**

MEMORANDUM OF AGREEMENT (MOA)  
BETWEEN  
U.S ARMY ENGINEER DISTRICT, ST. LOUIS  
AND  
U.S. ARMY ENGINEER DISTRICT, KANSAS CITY  
AND  
MISSOURI AIR NATIONAL GUARD  
FOR  
FORMERLY USED DEFENSE SITE PROGRAM (FUDS)  
FORMER JEFFERSON BARRACKS POST DUMPING GROUNDS,  
ST. LOUIS, MISSOURI

- 1.0 Purpose and Authority: The Purpose of this Memorandum of Agreement (MOA) is to define the relationship, responsibilities and general objectives under which the Missouri Air National Guard (MOANG) and the St. Louis (MVS) and Kansas City (NWK) Districts will achieve future maintenance of warning signs and revetment which were installed at the Jefferson Barracks former Post Dumping Grounds during Fiscal Years (FY) 1999, 2000 and 2001. The warning signs and revetment are institutional controls that were implemented in order to provide effective protection of human health from the potential exposure to unexploded ordnance. The MOA is intended to promote coordination and cooperation between the MoANG and the two U.S. Army Corps of Engineers (USACE) Districts. The MOA is in accordance with the Defense Environmental Restoration Program (DERP), 10 U.S.C. 2701-2707, 1986, which authorizes the Secretary of Defense to conduct response actions at sites which were contaminated while under the jurisdiction of the Department of Defense (DoD). Additionally, 40 C.F.R. 300.120, designated DoD to be the removal response authority for incidents involving DoD military weapons and munitions under the jurisdiction, custody and control of DoD.
- 2.0 Scope: This MOA defines responsibilities involving the Operations and Maintenance (O&M) to be performed at the former Jefferson Barracks site. It defines responsibilities that are mutually agreeable to the MOANG and both Districts. The quitclaim deed transferring from the United States to the State of Missouri the portion of the Former Jefferson Barracks being utilized by the MOANG is attached to this document as APPENDIX A.
- 3.0 Project Execution: The Kansas City District transferred remedial action funds to the MOANG and MVS for the execution of warning signs and revetment via Military

Interdepartmental Purchase Request (MIPR) during FY 1999. The MOANG awarded and administered an 8(a) contract with DKW, Inc. for the installation of warning signs. MVS awarded and administered a contract for the revetment placement with a large business contractor, Patton-Tully Transportation.

#### 4.0 Operations and Maintenance (O&M) Responsibilities:

##### **Missouri Air National Guard (MOANG)**

- Responsible for inspection of any degradation to warning signs and/or revetment at least twice a year, particularly during low water periods. Warning sign degradation may include broken signs and/or posts or sign lettering that is faded or defaced. Revetment degradation may include displacement of rock, undercutting of revetment layer or deterioration of stone caused by cracking, spalling, splitting or disintegration.
- Responsible for notification of any warning sign/revetment damage as a result of natural degradation, natural disaster, civil unrest or vandalism to the Kansas City District immediately upon discovery.
- Responsible for distribution of an annual report of results of inspections to the Missouri Department of Natural Resources (MDNR), the Environmental Protection Agency (EPA), and the Kansas City District on or before the 31<sup>st</sup> of January each year (reflecting the results of the inspections during the previous calendar year).
- Responsible for funding requests to the Kansas City District for warning sign repairs and in-house project management and contract administration support.
- Responsible for negotiation and award of contract for warning sign repairs.
- Responsible for administering contract for warning sign repairs.
- Responsible for construction oversight of warning sign repair work.

- Responsible for payment of contractor pay estimates after warning sign repairs are satisfactorily completed.
- Responsible for enforcement of existing deed restrictions, if applicable to the MOANG and the State of Missouri.
- Responsible for distribution of any environmental baseline study relevant to the Former Jefferson Barracks Post Dumping Grounds to the MDNR, EPA and the Kansas City District.
- Responsible for notification of the sale or lease of the property to the MDNR, EPA and the Kansas City District. Additionally, a deed restriction, to be pursued by EPA and MDNR with the State of Missouri, shall be added to this document as APPENDIX B.

#### **St. Louis District (MVS)**

- Responsible for inspection of revetment once a year by boat or aerial methods as part of normal river maintenance operations.
- Responsible for notification of any revetment damage to the Kansas City District immediately upon discovery.
- Responsible for funding requests to the Kansas City District for revetment repairs and in-house engineering, project management, contract administration and ordnance safety support.
- Responsible for negotiation and award of contract or task order for revetment repairs.
- Responsible for administering contract or task order for repairs.
- Responsible for construction oversight of revetment repairs.
- Responsible for verifying contractor pay estimates after revetment repairs are satisfactorily completed and forwarding to Kansas City District for payment to the contractor.
- Responsible for distribution of as-built drawings to MDNR, EPA, and the Kansas City District.

#### **Kansas City District (NWK)**

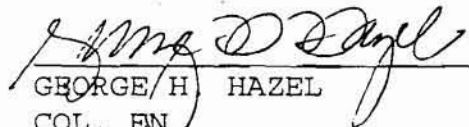
- Responsible for the management and coordination of all funding actions regarding warning sign and revetment repairs.
- Responsible for funding requests to FUDS Program Manager at Northwestern Division (NWD).
- Responsible for providing appropriate fund cite to St. Louis District for award of contract or task order for revetment repairs.
- Responsible for providing required funding to MoANG and St. Louis District for in-house project management and contract administration functions.
- Responsible for payment of contractor pay estimates after St. Louis District verification procedures are complete.
- Responsible for overall project management of warning sign/revetment repair efforts, including coordination of ordnance safety and community relations functions.
- Responsible for notification of any O&M actions to MDNR and EPA.
- Responsible for maintaining a current Point of Contract (POC) list attached to this MOA as APPENDIX C.
- Responsible for including as-built drawings to this MOA as APPENDIX D.
- Responsible for initiating repair actions to warning signs and/or revetment due to natural degradation, natural disaster, civil unrest or vandalism.
- Responsible for the notification of any repair actions to warning signs and/or revetment to MDNR and EPA.
- Responsible for notification of any changes to the Formerly Used Defense Site (FUDS) Program that would affect the terms of this MOA to MDNR and EPA.
- Responsible for the coordination and performance of a five year review that will include a complete survey of the revetment site to determine if any actions are necessary to restore the site to "as-built" conditions. This review shall

begin five years after the signed Action Memorandum dated 23 October 1998.


- Responsible for programming funds in the FUDS work plan for St. Louis and Kansas City Districts to conduct a five year review of the revetment site.

5.0 Effective Date, Amendment, Modification, and Termination:


This MOA may be modified or amended only by written, mutual agreement of all parties. This MOA shall be effective upon signature of all parties to the agreement and shall remain in effect for the duration of the Formerly Used Defense Site (FUDS) Program.

  
\_\_\_\_\_  
GEORGE H. HAZEL  
COL, EN  
Commanding, Kansas City District

Date: JUN 27 2001

  
\_\_\_\_\_  
MICHAEL R. MORROW  
COL, EN  
Commanding, St. Louis District

Date: 17 JUL 01

  
\_\_\_\_\_  
JOHN D. HAVENS  
Major General, MOARNG  
The Adjutant General

Date: 27 Aug 01

## **Attachment 3**





DANGER  
RENE EXPLODED



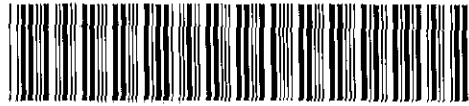
## **Attachment 4**







## **Attachment 5**



\* 2004100600449 \*

**JANICE M. HAMMONDS, RECORDER OF DEEDS**  
**ST. LOUIS COUNTY MISSOURI**  
**41 SOUTH CENTRAL, CLAYTON, MO 63105**

TYPE OF INSTRUMENT      GRANTOR      TO      GRANTEE  
**ESMT      STATE OF MISSOURI      COUTY OF ST LOUIS**

PROPERTY      **SUR 3344 T 44 R 6E**  
 DESCRIPTION:

Lien Number

Notation

Locator

**NOTE:** I, the undersigned Recorder of Deeds, do hereby certify that the information shown on this Certification Sheet as to the **TYPE OF INSTRUMENT**, the **NAMES** of the **GRANTOR** and **GRANTEE** as well as the **DESCRIPTION** of the **REAL PROPERTY** affected is furnished merely as a convenience only, and in the case of any discrepancy of such information between this Certification Sheet and the attached Document, the **ATTACHED DOCUMENT** governs. Only the **DOCUMENT NUMBER**, the **DATE** and **TIME** of filing for record, and the **BOOK** and **PAGE** of the recorded Document is taken from this **CERTIFICATION SHEET**.

**RECORDER OF DEEDS DOCUMENT CERTIFICATION**

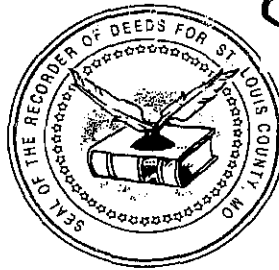
**STATE OF MISSOURI )**  
**SS.**  
**COUNTY OF ST. LOUIS )**

**Document Number**  
**449**

I, the undersigned Recorder of Deeds for said County and State, do hereby certify that the following and annexed instrument of writing, which consists of 12 pages, (this page inclusive), was filed for record in my office on the 6 day of October 2004 at 10:00 AM and is truly recorded in the book and at the page shown at the top and/or bottom of this page.

In witness whereof I have hereunto set my hand and official seal the day, month and year aforesaid.

*John A. Reber*  
 Deputy Recorder



*Janice M. Hammonds*  
 Recorder of Deeds  
 St. Louis County, Missouri

RECORDING FEE \$54.37  
 (Paid at the time of Recording)

Mail to:

**FACILITIES DIV**  
**6819 N. BOUNDARY RD.**  
**JEFFERSON CITY, MO**  
**65101-1207**

**B-16131 P-1230/1241**

## RESTRICTIVE COVENANT AND GRANT OF EASEMENT

THIS INDENTURE, made this 27 day of September, 2004, by the State of Missouri, represented by the Office of the Adjutant General, Missouri National Guard, 2302 Militia Drive, Jefferson City, Missouri, 65101-1203, of St. Louis County, in the State of Missouri, to provide notice of this Restrictive Covenant and Grant of Easement to all future Owner(s).

WITNESSETH: On this 27 day of September, 2004, pursuant to the terms of a Memorandum of Agreement (MOA) entered into by and between the Missouri Air National Guard (MOANG) and the U.S. Army Engineer District, St. Louis, and the U.S. Army Engineer District Kansas City, a Restrictive Covenant and Grant of Easement is hereby granted and recorded with the St. Louis County Recorder of Deeds in the Real Property Records of St. Louis County, Missouri, with respect to the Property described as follows:

See attached legal description, which by this reference is incorporated herein.

**NOW THEREFORE**, the State of Missouri, represented by the Office of the Adjutant General, Missouri National Guard, 2302 Militia Drive, Jefferson City, Missouri, 65101-1203, (hereinafter referred to as "Owner"), hereby imposes the following restrictions on the Property and covenants and agrees that:

### **A. Purpose**

In accordance with terms of the Memorandum of Agreement (MOA), this Restrictive Covenant and Grant of Easement is for the purpose of binding the Owner to the terms of the MOA, and provide notice to all future Owner(s) of the following: of the unexploded ordnance/ordnance explosives (UXO/OE) located on the property, of the continuing obligation to notify the Department of Defense (DoD) if any grounds are or will be disturbed in any way or if UXO/OE becomes exposed, or if the Property is transferred, leased, or restrictions modified, to provide notice of land use restrictions, and provision for construction on the Property.

Because the contaminants of concern will remain at levels above those appropriate for unrestricted use of the property, this Restrictive Covenant is being recorded with the St. Louis County Recorder of Deeds (the county where the Property is located) for the purposes of protecting public health and safety, the environment, and to prevent interference with the performance, operation, and maintenance of any response activities selected and/or undertaken by the Missouri Department of Natural Resources (MDNR) or USACE, any party acting as an agent for the MDNR or USACE, or any party acting pursuant to a work plan approved by the MDNR, or USACE.

The Property is classified as a Formerly Used Defense Site (FUDS).

### **B. Notification of Presence, Location, and Disposition of UXO/OE on the Property**

1. Notice of UXO/OE.

The Owner is hereby informed and does hereby acknowledge that UXO/OE has been found and is still presumably present at a site located on the easternmost portion of Former Jefferson Barracks currently known as the Jefferson Barracks Air National Guard Station, and owned by the State of Missouri.

Various munitions were disposed of at the site, which was known as the Former Jefferson Barracks Post Dumping Grounds, and was used from 1826 until 1950. The site is located between the Mississippi River and the Union Pacific railroad tracks from just North of where the old railroad depot stood, and extends South to within 500 feet of the property boundary of the former Veteran's Hospital. Long, narrow, and somewhat irregularly-shaped, the site extends some 2100 feet (North to South) and some 200 feet (East to West), and is approximately 10 to 12 acres in size. A survey and a legal description which are attached, and by this reference are incorporated herein, illustrate and describe the dimensions and location of the site.

References documenting the history, background, and current state of the site are listed as attachments, and by this reference are incorporated herein.

2. Location of UXO/OE.

The Owner is hereby informed and does hereby acknowledge that a clearance action of surface OE that included World War I era grenades and mortars was conducted on approximately 10 acres of the riverfront portion of the Former Jefferson Barracks Post Dumping Grounds (American Technologies, Inc., 1997). Subsequent investigations concluded that a defined area with larger amounts of metal, an approximately 200 feet by 850 feet area, located between the Union Pacific railroad tracks and the Mississippi River, was probably the historic disposal site (Earth Tech, 1998). Specific corrective measures have been implemented for this area because it was the area most suspected of containing remaining subsurface or near-surface UXO/OE items. The area was covered with a minimum 2.5 foot layer of riprap (USACE, 2003 Letter) to prevent surface exposure resulting from future river erosion. The attached surveyed map, which by this reference is incorporated herein, illustrates areas where riprap was applied to the site. Remedial work was completed in April 2003, and the U.S. Army Corps of Engineers (USACE) subsequently sent a letter to the U.S. Environmental Protection Agency (EPA) documenting completion (USACE, 2003). The USEPA closed out the project in September 2003 and officially entered the project into EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database as a long-term monitored site, under CERCLIS ID No. MO0002222883.

C. Notice of Memorandum of Agreement.

The Owner is hereby informed and does hereby acknowledge that the U.S. Army Engineer District, St. Louis, the U.S. Army Engineer District, Kansas City, and the Missouri Air National Guard (MOANG) are parties to a Memorandum of Agreement (MOA) (U.S. Army Corps of Engineers, Kansas City District, 2001), which assigns and documents oversight responsibilities. A copy of this Memorandum of Agreement can be obtained by written request to the Missouri Air National Guard, 65 Kearney Street, Jefferson Barracks, St. Louis, Missouri 63125-4190.

D. Duration.

The restrictions and other requirements described in this Restrictive Covenant and Grant of Easement shall run with the land and shall be binding upon any future Owner(s), heirs, successors, lessees, or assigns and their authorized agents, employees, or persons acting under their direction or control. This Restrictive Covenant and Grant of Easement shall continue into perpetuity, unless and until rescinded by MDNR and USACE. A copy of this Restrictive Covenant and Grant of Easement shall be provided to all heirs, successors, assigns, and transferees of Owner.

**E. Notice to Lessees and Other Holders of Interest in the Property.**

Owner, or any future holder of any interest in the Property, shall cause any lease, grant, or other transfer of any interest in the Property to include a provision expressly requiring the lessee or transferee to comply with this Restrictive Covenant and Grant of Easement. The failure to include such provision shall not affect the validity or applicability to the Property of this Restrictive Covenant and Grant of Easement.

**F. Grant of Easement to MDNR and USACE.**

1. Maintenance and Control.

The MOA defines operations and maintenance (O&M) responsibilities mutually agreed upon by both U.S. Army Engineer Districts and MOANG for the Former Jefferson Barracks Post Dumping Grounds. The O&M includes, but is not limited to, maintaining the warning signs and the revetment, and conducting semiannual inspections, which are institutional controls that were implemented to provide effective protection of human health from potential exposure to UXO/OE.

2. Notice and Time of Entry onto Property.

Entry onto the Property by MDNR or USACE pursuant to this Easement shall be upon reasonable notice and at reasonable times, provided that entry shall not be subject to these limitations if the MDNR or USACE determines that immediate entry is necessary to protect human health or the environment.

3. Emergencies, Operation, Maintenance and Inspections of the Property.

In the event of an emergency which presents a significant risk to human health or the environment, Subsection F.2. above may be suspended, provided such risk cannot be abated without suspending such Subsection.

4. Grant of Easement.

Owner hereby grants and conveys to the MDNR and USACE, their agents, contractors, and employees, and to any person performing remediation activities under the direction thereof, a non-exclusive easement (the "Easement") over the Property and over such other parts of the Property as are necessary for access to the Property or for carrying out any actions to abate a threat to human health or the environment. Pursuant to this Easement, the MDNR and/or USACE, their agents, contractors, and employees, and any person performing remediation activities under the direction thereof, may enter upon and inspect the Property and perform such investigations and actions as the MDNR and/or USACE deem necessary for any one or more of the following purposes:

- a. Ensuring that use, occupancy, and activities of and at the Property are consistent with this Restrictive Covenant;

- b. Ensuring that any remediation implemented complies with state law, including, but not limited to, § 260.350, *et seq.*, RSMo; § 260.565, *et seq.*, RSMo; § 260.435, *et seq.*, RSMo; § 260.500, *et seq.*, RSMo;
- c. Performing any additional investigations or remediation deemed necessary to protect human health and the environment;
- d. [if engineering controls are used:] Ensuring the structural integrity of any engineering controls described in this Restrictive Covenant and Grant of Declaration of Restrictive Covenant and Grant of Access, access and their continuing effectiveness in containing contaminants and limiting human and ecological exposure to the contaminants.

## G. Restrictions

1. UXO/OE located on the Property shall not be disturbed.  
Except as provided below, no action shall be taken, allowed, suffered, or omitted if such action or omission is reasonably likely to create a risk of migration of contaminants or explosion of contaminants or a potential health hazard to human health or the environment, including such actions as construction, excavation, or any activity that disturbs the ground surface.
2. Potential Hazards – Required Notice to DoD if ground disturbed or if UXO/OE becomes exposed.  
The Owner is hereby informed and does hereby acknowledge that the he/she will promptly notify the Department of Defense (DoD) if the Former Jefferson Barracks Post Dumping Grounds is or will be disturbed in any way, or if any UXO/OE becomes exposed at the site. Proper handling and disposal of UXO/OE is required, and must be managed by the DoD, the designated response authority for this site. The Defense Environmental Restoration Program, 10 USC 2701, authorizes the Secretary of Defense to conduct response actions at this site. 40 CFR 300.120 designated DoD as the response authority for incidents involving DoD military weapons and munitions under the jurisdiction, custody, and control of DoD.
3. Property Conveyance, and any changes in ownership, title, or restrictions.  
The Owner shall not convey any title, easement, or other interest in the Property without adequate and complete provision for the continued implementation, operation, and maintenance of any remedial action that has been implemented on the Property and without assuring prevention of the releases and exposures described in the provisions of the above subsections. Owner shall not convey any title, easement, or other interest in the Property without giving written notice to the Director, Missouri Department of Natural Resources – Hazardous Waste Program (MDNR-HWP), the State of Missouri Attorney General's office, and USACE not less than thirty (30) days prior to the expected date of transfer.
4. Land Use Restrictions and Provision for Alterations of Property.  
In furtherance of the purposes of this Restrictive Covenant, Owner shall assure that use, occupancy, and activity of and at the Property are restricted as indicated in this Restrictive Covenant and Grant of Easement.

Owner shall prohibit all activities as presented above that will result in human exposures above those specified in the cleanup assessment or risk assessment performed by MDNR



and/or USACE, or that would result in the release of a hazardous substance or explosive hazards that were addressed as a part of the remedial action.

5. Interference.

Owner shall prohibit all activities on the Property which may interfere with the response activities, operation and maintenance, long-term monitoring, or measures necessary to assure the effectiveness of the remedial action.

6. Alterations.

Owner shall not make, or allow or suffer to be made, any alteration of any kind in, to, or about any portion of the Property inconsistent with this Restrictive Covenant unless the Owner has first recorded MDNR Hazardous Waste Program's (MDNR-HWP) and the USACE's written approval of such alteration in the records of St. Louis County Recorder of Deeds. Owner shall request said written approval of proposed alteration at least thirty (30) days before the desired alteration is scheduled to commence.

7. Persons Entitled to Enforce Restrictions.

The restrictions in this Restrictive Covenant and Grant of Easement shall be enforceable in a Court of competent jurisdiction by Owner, and/or by the MDNR, and/or the USACE, their successors, transferees, and assigns.

8. Attachments.

- a. Legal Description of Former Jefferson Barracks Post Dumping Grounds,
- b. References, and
- c. Survey.

**H. General Provisions**

1. Conflicting statutes or regulations.

If any of this Restrictive Covenant and Grant of Easement is subject to any laws or regulations established by federal, state, or local government(s), the stricter of the two standards shall prevail.

2. Invalid Provisions.

If any provision of this Restrictive Covenant and Grant of Easement is held invalid by any Court of competent jurisdiction, invalidity of any such provision shall not affect the validity of any other provisions hereof. Also, such provisions shall continue unimpaired in full force and effect.

3. Amending, Modifying, or Rescinding the Restrictive Covenant.

This Restrictive Covenant and Grant of Easement shall not be amended, modified, or terminated except by a written instrument executed at the time of the proposed amendment, modification, or termination, by and between the Owner, the Director of MDNR-HWP, and the USACE. Within five (5) days of executing an amendment, modification, or termination of this Restrictive Covenant and Grant of Easement, the Owner shall record such amendment, modification, or termination on the appropriate form, with the St. Louis County Recorder of deeds, and within five (5) days thereafter, the Owner shall provide a true copy of the recorded amendment, modification, or termination to the Director of MDNR-HWP, and USACE.

In the event the MDNR or USACE determines that risks posed by the site have substantially changed subsequent to the execution of this Restrictive Covenant and Grant of easement (e.g., contaminant levels at the site change, or cleanup levels change), the agency(ies) may rescind this Restrictive Covenant and Grant of Easement.

5. Written Notice Required.

Written notice as required in the above subsections shall be via Certified, U.S. Mail to the MDNR-HWP and USACE at the following addresses:

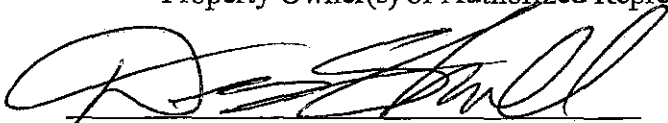
Director  
Missouri Department of Natural Resources  
Hazardous Waste Program  
Director's Office  
P.O. Box 176  
Jefferson City, MO 65102-0176

Commander  
U.S. Army Corps of Engineers  
Kansas City District  
601 E. 12<sup>th</sup> Street  
Kansas City, Missouri 64106-2896

I. SIGNATURES.

IN WITNESS WHEREOF, the undersigned property Owner or person executing this Restrictive Covenant and Grant of Easement on behalf of the Owner represents and certifies that they are truly authorized and have been fully empowered to execute and deliver this Restrictive Covenant and Grant of Easement.

Property Owner(s) or Authorized Representative(s) thereof:



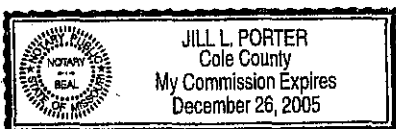
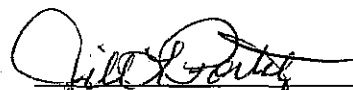
Dennis Shull  
Brigadier General (MO), MOARNG  
The Adjutant General

Date: 27 Sep 2004

STATE OF MISSOURI     )  
                                      ) ss:  
COUNTY OF COLE     )

Before me, the undersigned, a Notary Public, in and for said County and State, on this \_\_\_\_ day of September, 2004, personally appeared Owner(s) and/or Authorized Agent of Owner(s) State of Missouri, represented by the Brigadier General Dennis Shull, The Adjutant General, Missouri National Guard, to me known to be the identical person who executed the within and foregoing instrument, and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I hereunto set my official signature and affixed my notarial seal the day and year last above written.

My Commission Expires: Dec 26, 2005

**Attachments**

- a. Legal Description of Former Jefferson Barracks Post Dumping Grounds
- b. References
- c. Survey

A PART OF UNITED STATES PRIVATE SURVEY NO. 3344, TOWNSHIP 44 NORTH, RANGE 6 EAST OF THE FIFTH PRINCIPAL MERIDIAN, COUNTY OF ST. LOUIS, STATE OF MISSOURI BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

Commencing at the southwest corner of Lot no. 1 of Sylvan Place Subdivision, Phase II, as recorded in the land records of the County Recorder's Office in plat book no. 332, at page no. 22; thence S 36° 49' 21" E, 515.41 feet along the south line of said subdivision to the southeast corner thereof; thence S 65° 33' 17" E, 3072.72 feet to the TRUE POINT OF BEGINNING:

thence N 08° 43' 01" E, 240.97 feet;  
thence N 10° 22' 50" E, 572.68 feet;  
thence N 13° 01' 59" E, 275.11 feet;  
thence N 17° 56' 57" E, 191.74 feet;  
thence S 80° 47' 06" E, 102.13 feet;  
thence S 71° 06' 07" E, 138.88 feet;  
thence S 14° 30' 26" E, 22.71 feet to the waters edge of the Mississippi River (elevation 374.5, as measured on January 8, 2002); thence along said waters edge the following courses and distances:

S 05° 44' 47" W, 90.99 feet;  
thence S 22° 36' 50" W, 43.35 feet;  
thence N 53° 17' 02" W, 34.31 feet;  
thence S 23° 55' 41" W, 40.63 feet;  
thence S 02° 57' 36" E, 125.30 feet;  
thence S 21° 37' 19" W, 46.24 feet;  
thence S 11° 44' 35" W, 82.25 feet;  
thence S 08° 06' 37" W, 115.11 feet;  
thence S 15° 59' 24" W, 100.59 feet;  
thence S 15° 32' 51" W, 130.51 feet;  
thence S 10° 51' 42" W, 122.32 feet;  
thence S 02° 09' 10" W, 112.87 feet;  
thence S 05° 21' 53" W, 132.41 feet;  
thence S 15° 02' 36" W, 97.28 feet;  
thence S 24° 59' 25" W, 56.09 feet; thence leaving said water's edge, N 72° 38' 46" W, 27.36 feet;  
thence N 72° 38' 46" W, 217.92 feet, containing 7.61 acres, more or less.

Attachment A

## 8. References:

U.S. Army Corps of Engineers, Kansas City District, 2003, Letter to U.S. Environmental Protection Agency regarding Former Jefferson Barracks Post Dumping Grounds Revetment (Riprap) Project, St. Louis, Missouri, Project Close Out, May. (Document functions as final report.)

TechLaw, Inc., 2002, Oversight of Followup Final Inspection Trip Report No. 2, Jefferson Barracks (ex) Post Dumping Grounds, St. Louis County, Missouri, December.

TechLaw, Inc., 2002, Oversight/Review of Final Inspection Trip Report, Jefferson Barracks (ex) Post Duumping Grounds, St. Louis County, Missouri, March.

U.S. Army Corps of Engineers, Kansas City District, 2001, Memorandum of Agreement (MOA) Between U.S. Army Engineer District, St. Louis and U.S. Army Engineer District, Kansas City, and Missouri Air National Guard for Formerly Used Defense Site Program (FUDS) Former Jefferson Barracks Post Dumping Grounds, St. Louis, Missouri, August.

Earth Tech, 1998, U.S. Army Engineering and Support Center, Huntsville, Action Memorandum, Former Jefferson Barracks, St. Louis County, Missouri, September.

Earth Tech, 1997, U.S. Army Engineering and Support Center, Huntsville, Project Work Plan (Part 1) and Site Safety and Health Plan (Part 2), Engineering Evaluation/Cost Analysis Investigation, Former Jefferson Barracks, St. Louis County, Missouri, October.

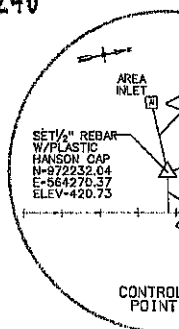
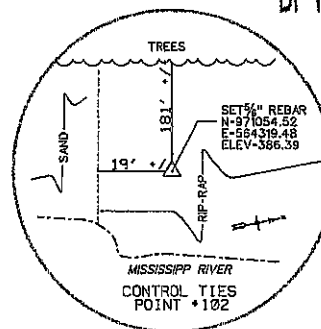
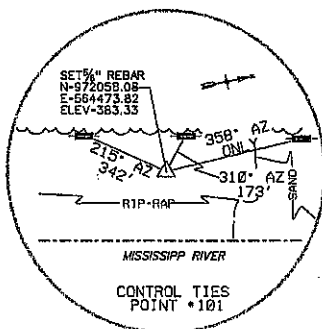
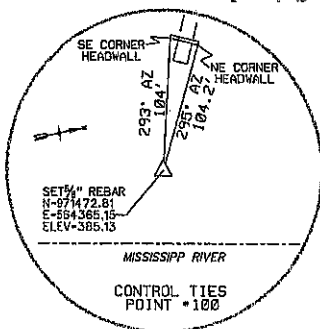
Earth Tech, 1998, U.S. Army Engineering and Support Center, Huntsville, Engineering Evaluation/Cost Analysis, Former Jefferson Barracks, St. Louis County, Missouri, September.

American Technologies, Inc, 1997, Final Report Ordnance Detection and Clearance Contract; prepared for the U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville, Alabama, June.

U.S. Army Corps of Engineers, St. Louis District, 1994, Ordnance and Explosive Waste Chemical Warfare Material Archives Search Report Conclusions and Recommendations, Jefferson Barracks, St. Louis County, Missouri, Project No. B07MO014303, October.

U.S. Army Corps of Engineers, Kansas City District, 1990 - DERP FUDS Inventory Project Report for Site No. B07MO014300, Jefferson Barracks, Missouri (Formerly Jefferson Barracks Military Post), May.

Attachment B



## LEGAL DESCRIPTION - 7.61 ACRE TRACT

A PART OF UNITED STATES PRIVATE SURVEY NO. 3344, TOWNSHIP 44 NORTH, RANGE 6 EAST OF THE FIFTH PRINCIPAL MERIDIAN, COUNTY OF ST. LOUIS, STATE OF MISSOURI BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

Commencing at the southwest corner of Lot no. 1 of Sylvan Place Subdivision, Phase II, as recorded in the land records of the County Recorder's Office in plat book no. 332, at page no. 22; thence S 36° 49' 21" E, 515.41 feet along the south line of said subdivision to the southeast corner thereof; thence S 65° 33' 17" E, 3072.72 feet to the TRUE POINT OF BEGINNING:

thence N 08° 43' 01" E, 240.97 feet;  
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S 05° 44' 47" W, 90.99 feet;  
thence S 22° 36' 50" W, 43.35 feet;  
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thence S 15° 59' 24" W, 100.59 feet;  
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thence S 10° 51' 42" W, 122.32 feet;  
thence S 02° 09' 10" W, 112.87 feet;  
thence S 05° 21' 53" W, 132.41 feet;  
thence S 15° 02' 36" W, 97.28 feet;  
thence S 24° 59' 25" W, 56.09 feet; thence leaving said water's edge, N 72° 38' 46" W, 27.36 feet;  
thence N 72° 38' 46" W, 217.92 feet, containing 7.61 acres, more or less.

## SURVEY NOTES:

THIS SURVEY CREATES A NEW 7.61 ACRE PARCEL AT THE REQUEST OF THE ST. LOUIS DISTRICT CORPS OF ENGINEERS

MEASURED DIMENSIONS SHOWN WITHOUT PARENTHESES  
DEED OR RECORD DIMENSIONS SHOWN WITH PARENTHESES

BASIS OF BEARINGS - GRID NORTH ADOPTED FROM PREVIOUS SURVEY BY HANSON ENGINEERS AND SURVEYORS, SUPPLIED BY THE ST. LOUIS DISTRICT CORPS OF ENGINEERS

NO MONUMENTATION WAS SET AT ANY CORNERS OF THE 7.61 ACRE TRACT AT THE REQUEST OF THE ST. LOUIS DISTRICT CORPS OF ENGINEERS

SURVEY CLASS "A" - RURAL

## GENERAL NOTES:

VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES ARE MISSOURI EAST ZONE STATE PLANE.

WATER SURFACE ELEVATION - 380.0 ON AUGUST 16, 2002  
- 374.5 ON JANUARY 8, 2003

GROUND SURVEYS OF SITE PERFORMED AUGUST 15 & 16, 2002 & JANUARY 8, 2003, BY HANSON ENGINEERS AND SURVEYORS  
ALL HORIZONTAL AND VERTICAL CONTROL SHOWN WAS SET BY HANSON. THE COORDINATES SHOWN FOR THE CONTROL MONUMENTS WAS ACCEPTED, AND NOT VERIFIED TO PUBLISHED STATE PLANE CONTROL MONUMENTS

HYDROGRAPHIC SURVEYS PERFORMED AUGUST 22, 2002 BY HANSON ENGINEERS AND SURVEYORS. WATER SURFACE ELEVATION - 382.6 ON AUGUST 22, 2002

## LINE DIMENSION TABLE

NO.	BEARING	DISTANCE
1	N 72° 38' 46" W	27.36'
2	S 80° 47' 06" E	102.13'
3	S 14° 30' 26" E	22.71'
4	S 05° 44' 47" W	90.99'
5	S 22° 36' 50" W	43.35'
6	N 53° 17' 02" W	34.31'
7	S 23° 55' 41" W	40.63'
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12	S 15° 32' 51" W	130.51'
13	S 10° 51' 42" W	122.32'
14	S 02° 09' 10" W	112.87'
15	S 15° 02' 36" W	97.28'
16	S 24° 59' 25" W	56.09'

## REFERENCES:

PREVIOUS SURVEY BY HANSON ENGINEERS AND SURVEYORS SUPPLIED BY THE ST. LOUIS DISTRICT CORPS OF ENGINEERS

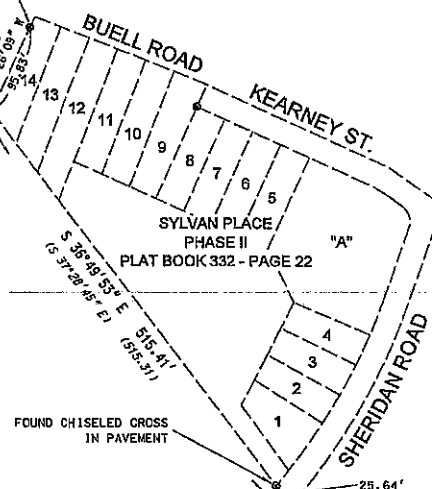
RECORD PLAT OF SYLVAN PLACE SUBDIVISION, PHASE II  
PLAT BOOK 322 - PAGE 22

## LEGEND

	TREELINE
	TREE
	CONTROL MONUMENT
	SIGN
	GUY WIRE
	POWER POLE
	OVERHEAD ELECTRIC

FOUND 1/2" IRON PIN  
WITH CAP (LS 219-0)

POINT OF COMMENCEMENT  
S.W. CORNER LOT 14, SYLVAN  
PLACE SUBDIVISION, PHASE II  
P.B. 332 - PAGE 22



FOUND CHISELED CROSS  
IN PAVEMENT

## FILED FOR RECORD

STATE OF MISSOURI ) ss  
COUNTY OF ST. LOUIS )

FILED FOR RECORD THIS \_\_\_\_\_ DAY OF \_\_\_\_\_

AND DULY RECORDED IN BOOK \_\_\_\_\_ AT PAGE \_\_\_\_\_

RECORDER, ST. LOUIS COUNTY, MISSOURI

## SURVEYOR'S CERTIFICATION

THIS IS TO CERTIFY THAT AT THE REQUEST OF THE ST. LOUIS DISTRICT CORPS OF ENGINEERS, THE TRACT SHOWN HEREON WAS SURVEYED UNDER MY DIRECT SUPERVISION, AND THE RESULTS OF SAID SURVEY ARE REPRESENTED CORRECTLY ON THIS PLAT. SAID SURVEY WAS EXECUTED IN ACCORDANCE WITH THE CURRENT MINIMUM STANDARDS FOR PROPERTY BOUNDARY SURVEYS OF THE MISSOURI DEPARTMENT OF NATURAL RESOURCES, DIVISION OF GEOLOGY AND LAND SURVEYING. THERE MAY EXIST OTHER DOCUMENTS THAT COULD AFFECT THE ACCURACY OF WHICH AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.

IN WITNESS WHEREOF, I HAVE SET MY SEAL AND SIGNATURE

THIS 29 \_\_\_\_\_ DAY OF \_\_\_\_\_, 2003

R. CHRISTOPHER BOWEN, LAND SURVEYOR NO. P.L.

BB1613 1/1241  
169.9



Revisions	Date	Appr.

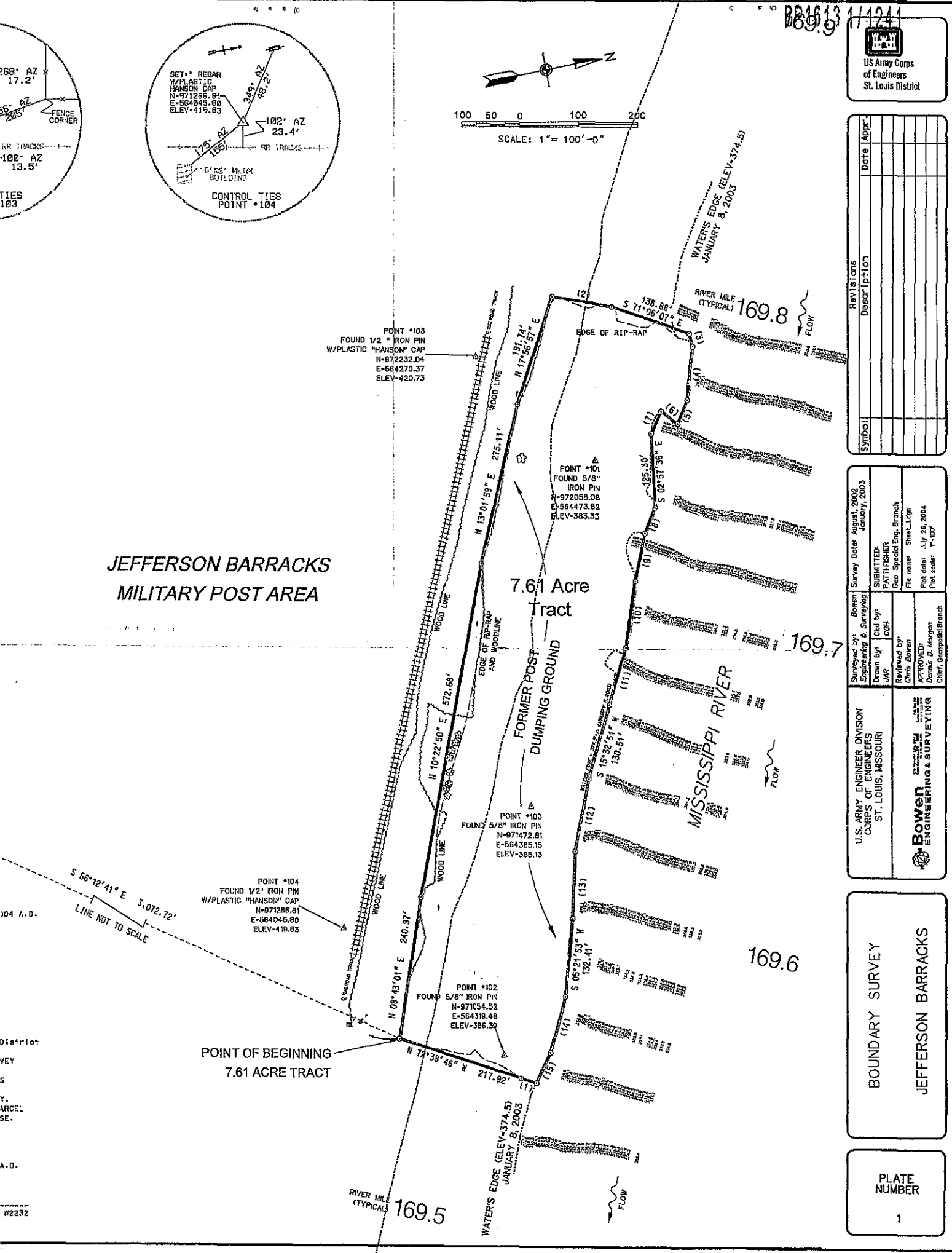
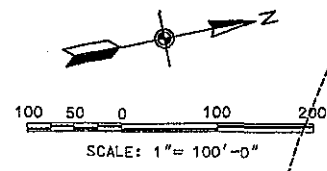
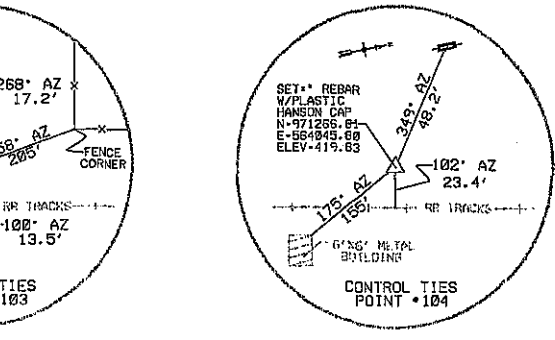
Survey Date: August 2002	Surveyed by: Bowen	Drawn by: JAP	Checked by: CGH	Reviewed by: Chris Bowen	APPROVED: Dennis D. Morgan	Chief, Geospatial Branch
January 7, 2003	Engineering & Surveying					
SUBMITTED: PATTI FISHER	Geo Spatial Eng. Branch					
File name: Sheet 1.dgn						
Plot date: July 26, 2004						
Plot scale: 1"=50'						

U.S. ARMY ENGINEER DIVISION  
CORPS OF ENGINEERS  
ST. LOUIS, MISSOURI

**Bowen**  
ENGINEERING & SURVEYING

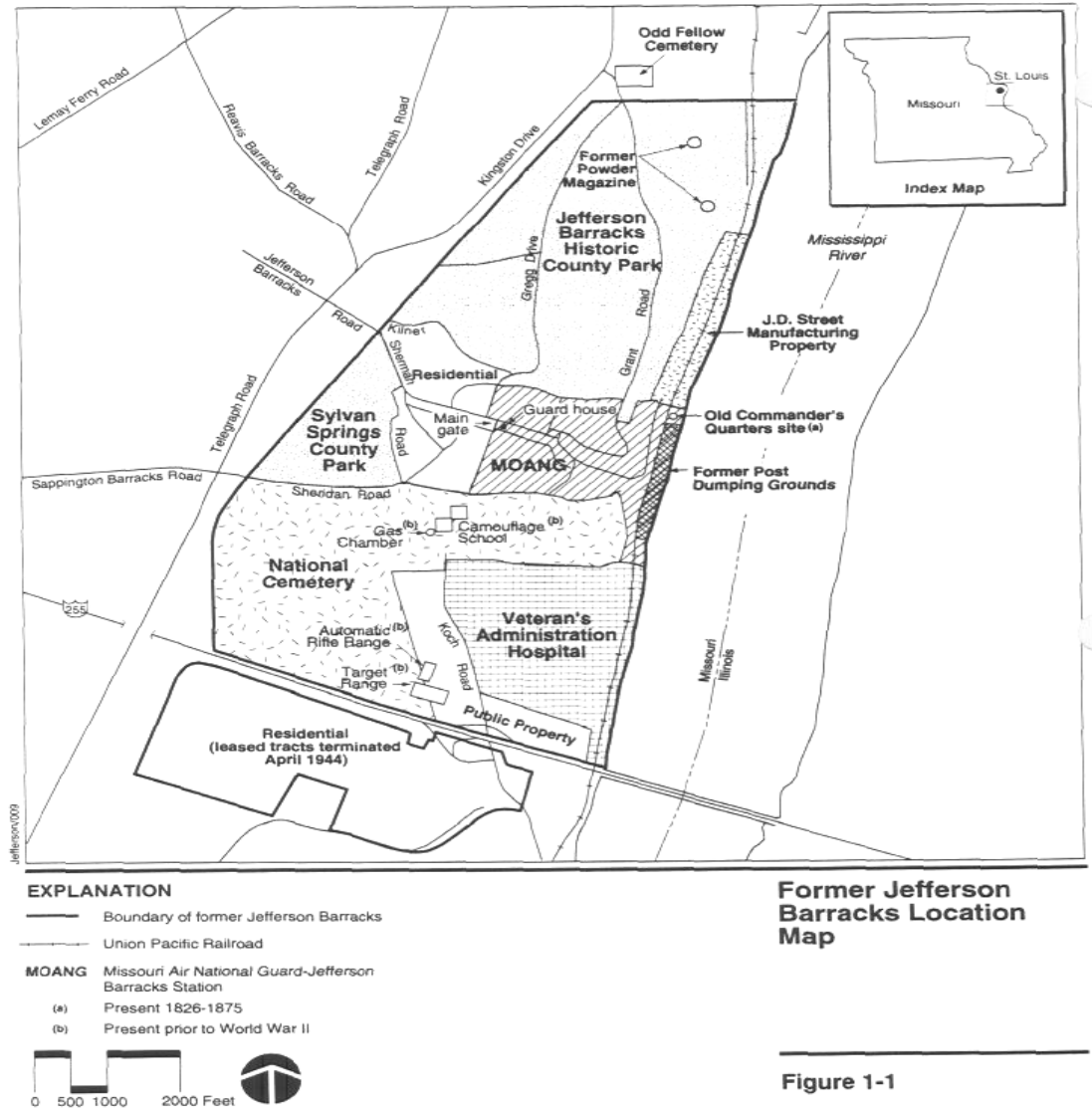
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JEFFERSON BARRACKS

PLATE NUMBER  
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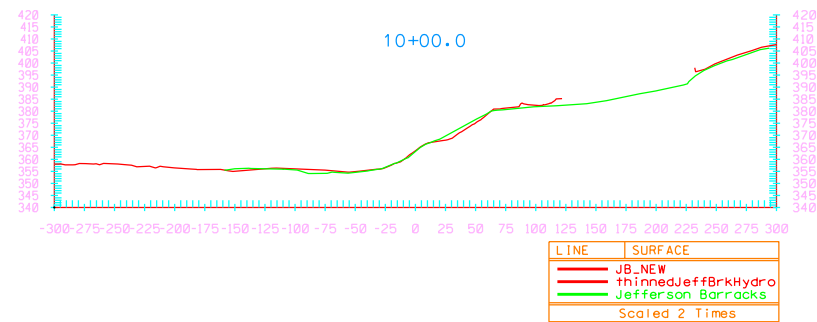
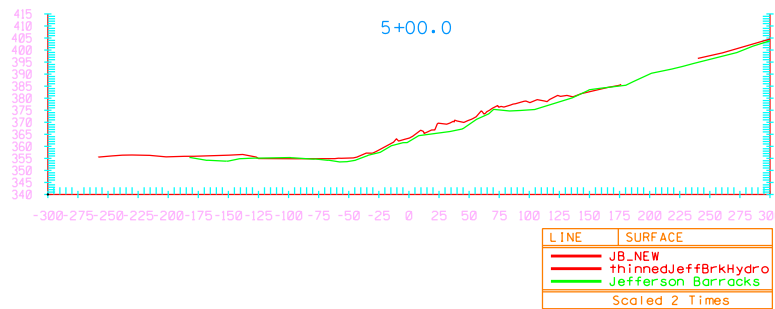
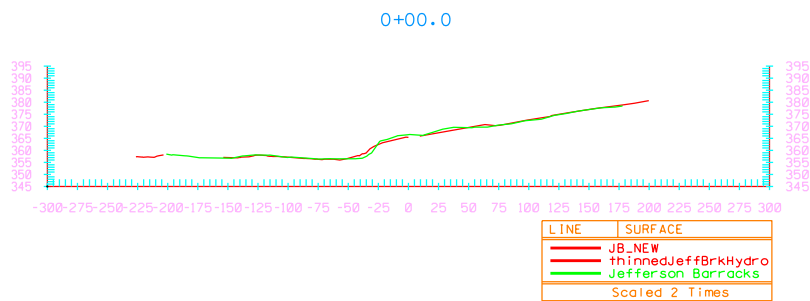
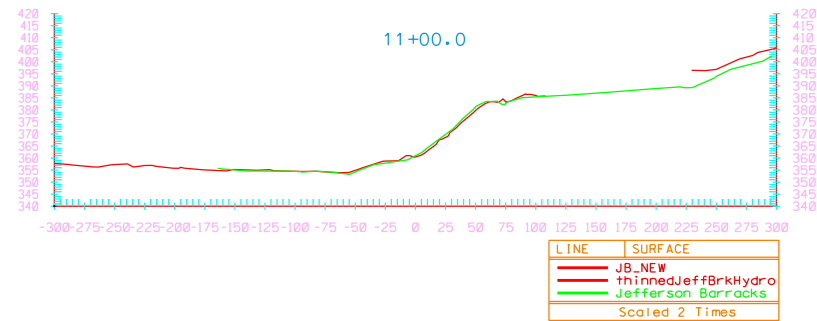
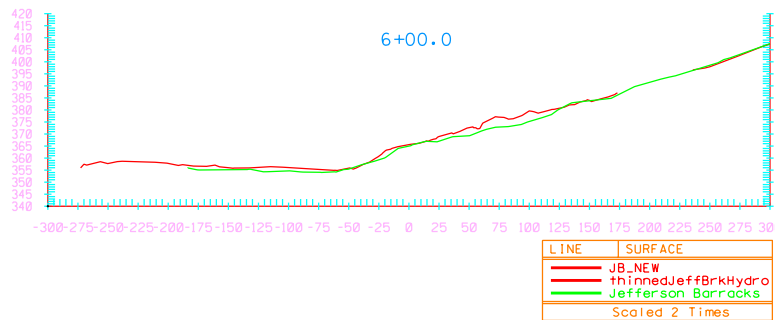
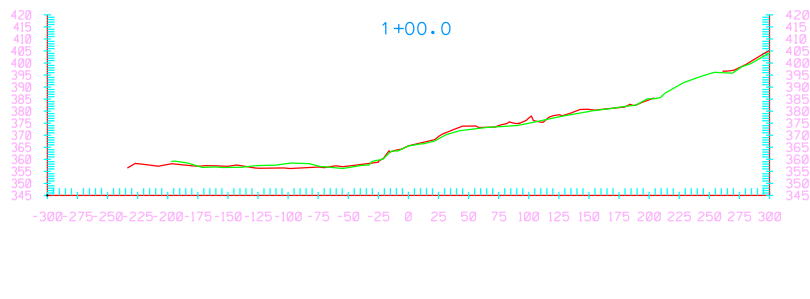
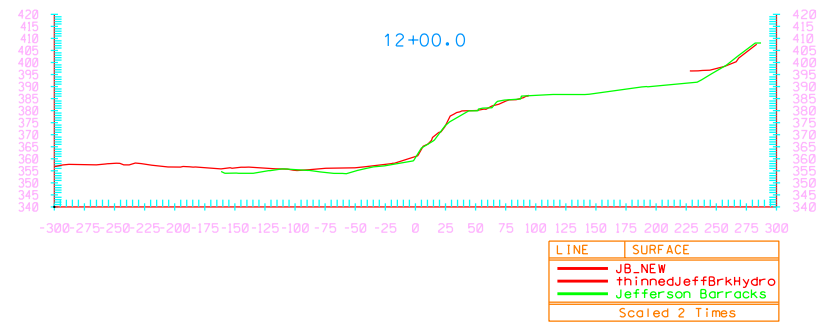
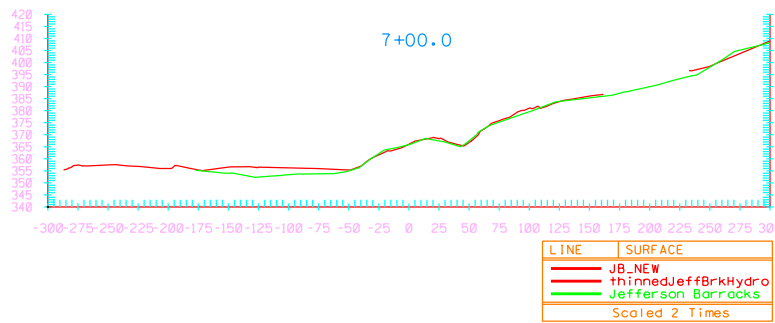
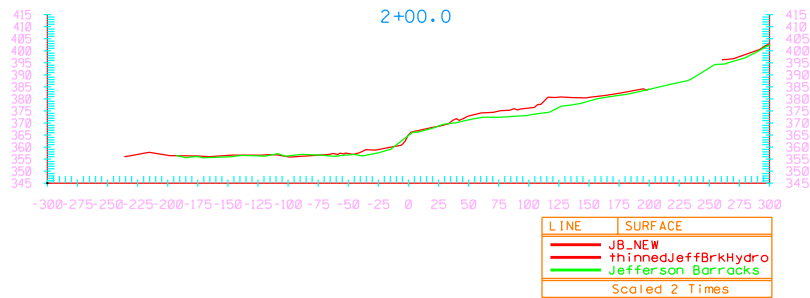
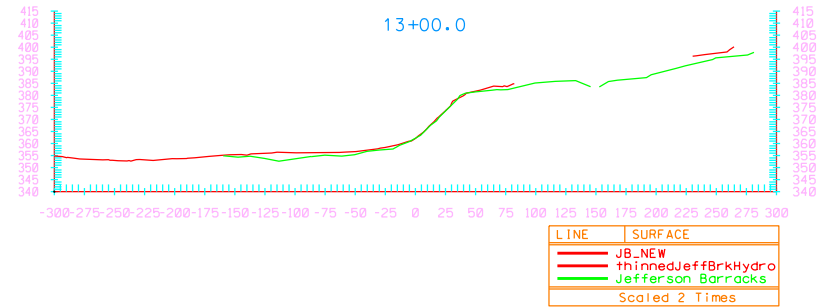
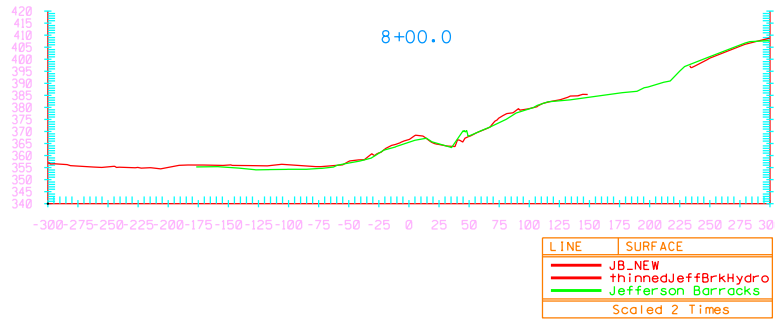
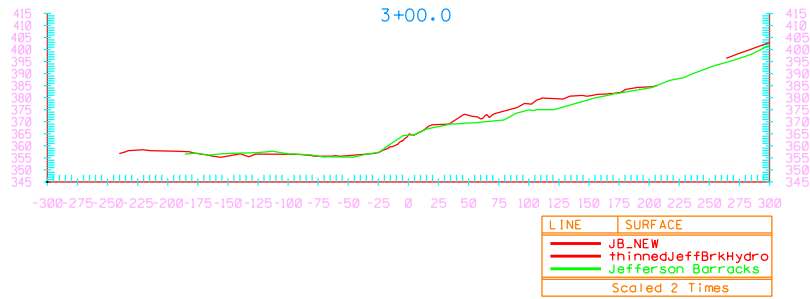
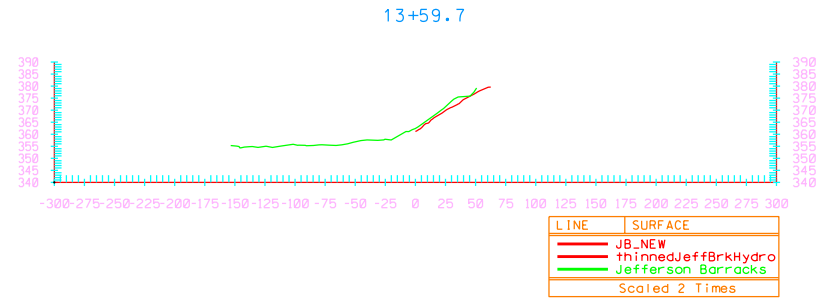
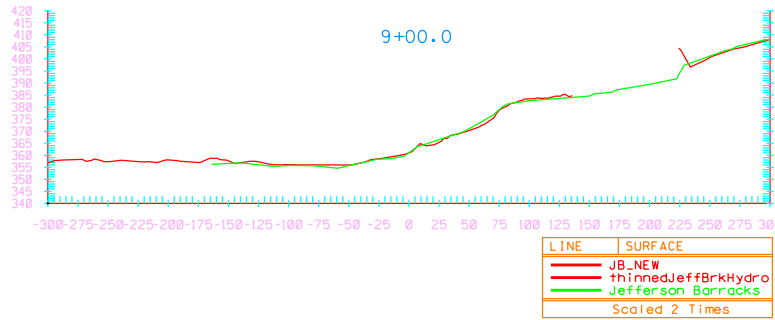
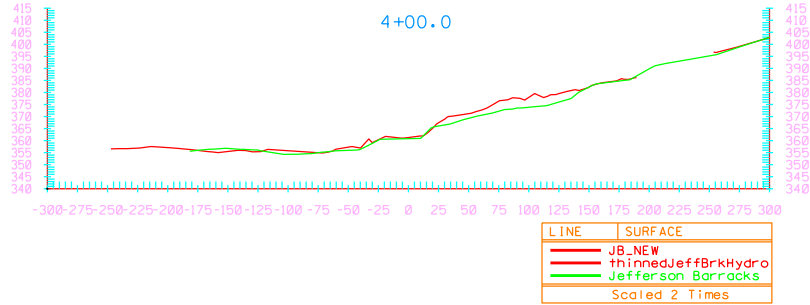
District  
VEY  
S  
V.  
ARCEL  
SE.  
A.D.  
#2232

# Attachment 6



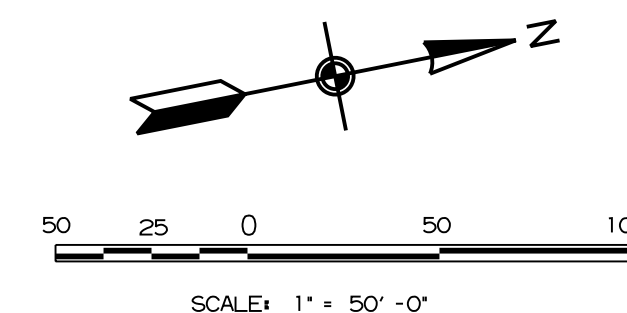


## Attachment 7



## **Attachment 8**

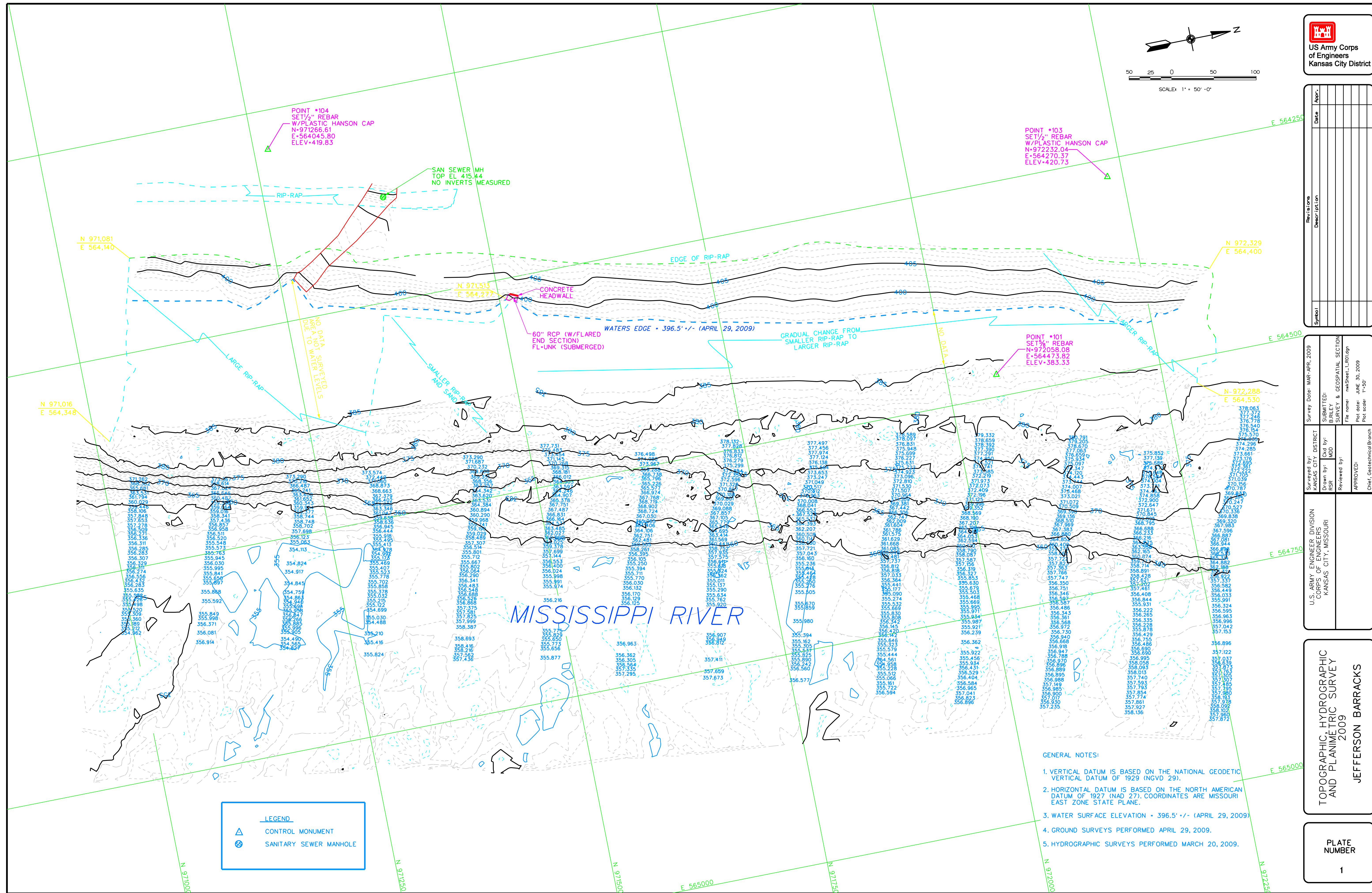


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	Drawn by:	Gkd	KANSAS CITY DISTRICT		
	RSR	MOD	SUBMITTED:		BRILEY SURVEY & GEOSPATIAL SECTION
	Reviewed by:		File name: nwkSheet...L1R01.dgn		
APPROVED:			Plot date: JUNE 30, 2009		Plot scale: 1"=10'
			Chief, Geotechnical Branch		

TOPOGRAPHIC, HYDROGRAPHIC  
AND PLANIMETRIC SURVEY  
2009  
JEFFERSON BARRACKS

PLATE  
NUMBER  
1





## **Attachment 9**

<b>INSPECTORS QUALITY ASSURANCE REPORT (QAR)</b>  <i>(ER 1180-1-6)</i>						THE QCR WILL BE ATTACHED TO OR FILED WITH THE QAR			
						REPORT NUMBER: 1- 120303			
TO: Diana Bailey, USEPA Region VII and Mark Ort, MDNR						DATE: December 08, 2003 Monday			
<b>PROJECT: Former Jefferson Barracks Post Dumping Grounds, St. Louis, MO</b>  <b>Long Term Monitoring – Site Inspection of Riprap</b>						CONTRACT NO: NA			
CONTRACTOR (Or hired labor): NA						WEATHER: Rainy & Cold			
PORTION OF SCHEDULED DAY SUITABLE FOR OPERATIONS						TEMPERATURE			
Structural Excavation	Borrow Excavation	Embankment	Concrete	Structure	MINIMUM 38		MAXIMUM 42		
HAS ANYTHING DEVELOPED ON THE WORK WHICH MIGHT  LEAD TO A CHANGE ORDER OR FINDING OF FACT? <div style="float: right;"> <input type="checkbox"/> NO    <input type="checkbox"/> YES (Explain)         </div>						24 HOUR PRECIPITATION			
						INCHES .10		ENDING .10	
NUMBER OF FEDERAL GOVERNMENT EMPLOYEES						RIVER STAGE			
SUPERVISORY	OFFICE	LAYOUT	INSPECTION 3	TOTAL 3	LABOR	FEET    N/A 1.2		TIME 12:00PM	
NUMBER OF NON- FEDERAL GOVERNMENT EMPLOYEES				NUMBER OF SHIFTS <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3					
SUPERVISION 3	SKILLED	LABORERS	TOTAL 3	FROM 1300	TO 1500	FROM	TO	FROM	TO
Attach list of the following if applicable: (a) Major items of equipment either idle or working, and (b) Number and classification of contractor or Government personnel onsite. Note: If the contractor's Quality Control Report (QCR) contains the information it need not be repeated.									
<b>INSPECTION PARTICIPANTS</b>  <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;">           a. Art Schuermann, MO Air National Guard            b. Mark Ort, MO Department of Natural Resources            c. Keith Slider, TechLaw, Inc. (Representing USEPA)            d. Jerry Rapp, St. Louis District (Potomology Section)         </div> <div style="width: 48%;">           e. Gregg Kocher, St. Louis District (Ordnance and Technical Services)            f. Josephine Newton-Lund, Kansas City District (PM)            g.            h.         </div> </div>									
<b>WORK PERFORMED TODAY</b> <i>(Indicate location and description of work performed. Refer to work performed by prime and/or subcontractors by letter in Table above, if applicable:</i> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;">           a. Site Inspection of riprap by USACE, MOANG and MDNR            b. Project meeting in MOANG office.            c.            d.         </div> <div style="width: 48%;">           e.            f.            g.            h.         </div> </div>									
Days of no work and reasons for same: NA									

Information on progress of work, causes for delays and extent of delays, Plant, material, etc.

Equipment List: NONE

ENG FORM 2538-2 R, May 94 (CIVIL)

Page 1 of 2

CQC INSPECTION PHASES ATTENDED AND INSTRUCTIONS GIVEN

- 1) Tailgate Safety Brief by Art Schuermann, MOANG and Gregg Kocher, St. Louis District. Art and Gregg discussed safety precautions related to slip and fall and potential ordnance encounter during the inspection of riprap in rain and cold.
- 2) Inspection of riprap. Purpose of site inspection was to observe the condition and effectiveness of the riprap cover that was placed at the site in order to contain potential unexploded ordnance (UXO) items, such as WWI Stokes mortars and rifle grenades.
- 3) Project meeting.

RESULTS OF QA INSPECTIONS AND TESTS, DEFICIENCIES OBSERVED, ACTIONS TAKEN AND CORRECTIVE ACTION OF CONTRACTOR. INCLUDE COMMENT PERTAINING TO CONTRACTORS CQC ACTIVITIES

- Observed the riprap cover and warning signs to be in good condition.
- Observed no obvious degradation or undercutting of the riprap.
- Observed a small amount of additional siltation, since last inspection of November 25, 2002.
- Observed no UXO or ordnance items of any kind.
- Observed three pieces of broken pottery on riprap located in the middle portion of the northern riprap area (area above additional riprap that was installed in April 2003). According to Art Schuermann, pieces of pottery from the former dump have surfaced occasionally on top of the riprap in this area. Art speculates that these pieces of pottery have been washed onto the riprap from the former void area that was discovered a year ago and is now contained with additional riprap since April 2003.

VERBAL INSTRUCTIONS GIVEN TO CONTRACTOR. *(Include names, reaction, remarks)*

- NA

CONTROVERSIAL MATTERS IN DETAIL

- NONE.

INFORMATION, INSTRUCTIONS OR ACTIONS TAKEN NOT COVERED IN QCR REPORT OR DISAGREEMENTS

- NONE.

REMARKS *(Include visitors to project and miscellaneous remarks pertinent to work)*

- Met with Keith Slider and Mark Ort in MOANG administrative office after site inspection. Keith and Mark reviewed their inspection notes. Keith requested information regarding the additional riprap that was installed last April 2003. I provided Keith with a copy of the Kansas City District's close out letter to EPA that provided the details he needed. Additionally, I shared the most recent CADD drawing of the site with both of them. I also shared the MOA that includes the site's real estate deed with Mark Ort, who will be pursuing the latest status of MDNR's deed restriction efforts with the State's Attorney General's office.

SAFETY *(Include any infractions of approved safety plan, safety manual or instructions from Government personnel. Specify corrective action taken.)*

- No safety infractions or injuries occurred during site inspection.

INSPECTOR'S SIGNATURE

DATE

SUPERVISOR'S INITIALS

DATE

Josephine Newton-Lund

12/08/2003





<b>INSPECTORS QUALITY ASSURANCE REPORT (QAR)</b>  <i>(ER 1180-1-6)</i>						THE QCR WILL BE ATTACHED TO OR FILED WITH THE QAR			
						REPORT NUMBER: 2- 120904			
TO: Mark Ort, MDNR						DATE: December 09, 2004 Thursday			
<b>PROJECT: Former Jefferson Barracks Post Dumping Grounds, St. Louis, MO</b>  <b>Long Term Monitoring – Site Inspection of Riprap</b>						CONTRACT NO: NA			
CONTRACTOR (Or hired labor): NA						WEATHER: Sunny & Warm			
PORTION OF SCHEDULED DAY SUITABLE FOR OPERATIONS						TEMPERATURE			
Structural Excavation	Borrow Excavation	Embankment	Concrete	Structure	MINIMUM 42		MAXIMUM 57		
HAS ANYTHING DEVELOPED ON THE WORK WHICH MIGHT  LEAD TO A CHANGE ORDER OR FINDING OF FACT? <div style="float: right;"> <input type="checkbox"/> NO    <input type="checkbox"/> YES (Explain)         </div>						24 HOUR PRECIPITATION			
						INCHES 0		ENDING .0	
NUMBER OF FEDERAL GOVERNMENT EMPLOYEES						RIVER STAGE			
SUPERVISORY	OFFICE	LAYOUT	INSPECTION 5	TOTAL 5	LABOR	FEET    N/A 17.79		TIME 8:00AM	
NUMBER OF NON- FEDERAL GOVERNMENT EMPLOYEES				NUMBER OF SHIFTS <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3					
SUPERVISION 2	SKILLED	LABORERS	TOTAL 2	FROM 1300	TO 1500	FROM	TO	FROM	TO
Attach list of the following if applicable: (a) Major items of equipment either idle or working, and (b) Number and classification of contractor or Government personnel onsite. Note: If the contractor's Quality Control Report (QCR) contains the information it need not be repeated.									
<b>INSPECTION PARTICIPANTS</b>  <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;">           a. Art Schuermann, MO Air National Guard            b. Mark Ort, MO Department of Natural Resources            c. George Tyhurst, Metropolitan Sewer District (MSD)            d. Jay Fowler, St. Louis District (Construction)         </div> <div style="width: 48%;">           e. Hank Counts, St. Louis District (Ordnance and Technical Services)            f. Robert Finneran, Kansas City District (Riprap Inspector)            g. Josephine Newton-Lund, Kansas City District (PM)            h.         </div> </div>									
<b>WORK PERFORMED TODAY</b> <i>(Indicate location and description of work performed. Refer to work performed by prime and/or subcontractors by letter in Table above, if applicable:</i>  <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;">           a. Site Inspection of riprap by USACE, MOANG and MDNR            b.            c.            d.         </div> <div style="width: 48%;">           e.            f.            g.            h.         </div> </div>									
Days of no work and reasons for same: NA									

Information on progress of work, causes for delays and extent of delays, Plant, material, etc.

Equipment List: NONE

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CQC INSPECTION PHASES ATTENDED AND INSTRUCTIONS GIVEN

- 1) Safety Briefing by Hank Counts, St. Louis District. Hank discussed safety precautions related to slip and fall and potential ordnance encounter during the inspection of riprap.
- 2) Inspection of riprap. Purpose of site inspection was to observe the condition and effectiveness of the riprap cover that was placed at the site in order to contain potential unexploded ordnance (UXO) items, such as WWI Stokes mortars and rifle grenades. Additionally, recent riprap re-work at sewer outflow area, which was performed in October 2004 by a St. Louis District contractor, was inspected.
- 3) Discussions with George Tyhurst in regard to future MSD work near riprap area.

RESULTS OF QA INSPECTIONS AND TESTS, DEFICIENCIES OBSERVED, ACTIONS TAKEN AND CORRECTIVE ACTION OF CONTRACTOR. INCLUDE COMMENT PERTAINING TO CONTRACTORS CQC ACTIVITIES

- Observed the riprap cover and warning signs to be in good condition.
- Observed no obvious degradation or undercutting of the riprap.
- Observed additional siltation and tree growth on top of riprap, since last inspection of December 3, 2003.
- Observed no UXO or ordnance items of any kind.
- Observed an opening square in shape and partially covered by a wooden pallet. The hole appeared to be two to three feet in depth. This sewer access opening was uncovered by the St. Louis District contractor back in October 2004 as a result of the Corps' agreement with MSD to re-work riprap in order to facilitate easier access to the sewer line for inspection purposes. George Tyhurst agreed to arrange for MSD personnel to cover the hole.

VERBAL INSTRUCTIONS GIVEN TO CONTRACTOR. *(Include names, reaction, remarks)*

- NA

CONTROVERSIAL MATTERS IN DETAIL

- NONE.

INFORMATION, INSTRUCTIONS OR ACTIONS TAKEN NOT COVERED IN QCR REPORT OR DISAGREEMENTS

- NONE.

REMARKS *(Include visitors to project and miscellaneous remarks pertinent to work)*

- The high Mississippi River stage of nearly 18 feet did not make for ideal conditions to inspect all or most of the riprap. Josephine Newton-Lund agreed to coordinate another inspection with Mark Ort, MDNR, in January/February 2005 when water levels are anticipated to be lower.
- George Tyhurst, agreed to notify the Corps (Josephine Newton-Lund) prior to the development of MSD plans to enlarge the sewer line which is located above the riprap area. If and when MSD performs this work, the Corps will provide ordnance oversight of construction activities.

SAFETY *(Include any infractions of approved safety plan, safety manual or instructions from Government personnel. Specify corrective action taken.)*

- No safety infractions or injuries occurred during site inspection. However, a sewer access opening was discovered and considered a safety hazard. George Tyhurst agreed to make arrangements with MDS personnel to secure a proper cover for the hole.

INSPECTOR'S SIGNATURE	DATE	SUPERVISOR'S INITIALS	DATE
Josephine Newton-Lund	12/27/2004		

<b>INSPECTORS QUALITY ASSURANCE REPORT (QAR)</b>  <i>(ER 1180-1-6)</i>						THE QCR WILL BE ATTACHED TO OR FILED WITH THE QAR			
						REPORT NUMBER: 3- 112905			
TO: Mark Ort, MDNR and Diana Bailey, EPA						DATE: November 17, 2005 Thursday			
<b>PROJECT: Former Jefferson Barracks Post Dumping Grounds, St. Louis, MO</b>  <b>Long Term Monitoring – Site Inspection of Riprap</b>						CONTRACT NO: NA			
CONTRACTOR (Or hired labor): NA						WEATHER: Sunny & Cool			
PORTION OF SCHEDULED DAY SUITABLE FOR OPERATIONS						TEMPERATURE			
Structural Excavation	Borrow Excavation	Embankment	Concrete	Structure	MINIMUM 18		MAXIMUM 35		
HAS ANYTHING DEVELOPED ON THE WORK WHICH MIGHT  LEAD TO A CHANGE ORDER OR FINDING OF FACT? <div style="float: right;"> <input type="checkbox"/> NO    <input type="checkbox"/> YES (Explain)         </div>						24 HOUR PRECIPITATION			
						INCHES 0		ENDING .0	
NUMBER OF FEDERAL GOVERNMENT EMPLOYEES						RIVER STAGE			
SUPERVISORY	OFFICE	LAYOUT	INSPECTION 4	TOTAL 4	LABOR	FEET    N/A -1.44		TIME 1:00PM	
NUMBER OF NON- FEDERAL GOVERNMENT EMPLOYEES				NUMBER OF SHIFTS <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3					
SUPERVISION 3	SKILLED	LABORERS	TOTAL 3	FROM 1300	TO 1500	FROM	TO	FROM	TO
Attach list of the following if applicable: (a) Major items of equipment either idle or working, and (b) Number and classification of contractor or Government personnel onsite. Note: If the contractor's Quality Control Report (QCR) contains the information it need not be repeated.									
<b>INSPECTION PARTICIPANTS</b>  <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;">           a. Art Schuermann, MO Air National Guard            b. Mark Ort, MO Department of Natural Resources            c. George Tyhurst, Metropolitan Sewer District (MSD)            d. Mike Stewart, Metropolitan Sewer District (MSD)         </div> <div style="width: 48%;">           e. Hank Counts, St. Louis District (Ordnance and Technical Services)            f. Jay Fowler, St. Louis District (Construction)            g. Josephine Newton-Lund, Kansas City District (PM)            h.         </div> </div>									
<b>WORK PERFORMED TODAY</b> <i>(Indicate location and description of work performed. Refer to work performed by prime and/or subcontractors by letter in Table above, if applicable:</i>  <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;">           a. Site Inspection of riprap and warning signs by USACE, MOANG and MDNR            b.            c.            d.         </div> <div style="width: 48%;">           e.            f.            g.            h.         </div> </div>									
Days of no work and reasons for same: NA									

Information on progress of work, causes for delays and extent of delays, Plant, material, etc.

Equipment List: NONE

ENG FORM 2538-2 R, May 94 (CIVIL)

Page 1 of 2

CQC INSPECTION PHASES ATTENDED AND INSTRUCTIONS GIVEN

- 1) Prior to the inspection, all participants introduced themselves. Additionally, a discussion regarding upcoming sewer work by MSD followed. George Tyhurst and Mike Stewart presented information regarding two future MSD projects near the Jefferson Barracks riprap area. One project to begin in the imminent future is named the Jefferson Barracks Pump Station Elimination Project. This project involves the installation of a 5' in diameter sewer line along the Union Pacific railroad tracks. The new sewer line will run from Jefferson Barracks to the Lemay Pumping Station. Jim Finnigan, who works for a MSD contractor, had notified Josephine Newton-Lund back in July 2005 in regard to this project. He arrived later to perform a site visit with MSD staff. The other project, which has not been funded and does not have a name yet, will involve the replacement of sewer line that runs down from the Jefferson Barracks facility, under the railroad tracks and ends just above the southern portion of riprap. This work will include replacement of the sewer outfall. Mike Stewart will be the project manager for this work.
- 2) Safety Briefing by Hank Counts, St. Louis District. Hank discussed safety precautions related to slip and fall and potential ordnance encounter during the inspection of riprap.
- 3) Inspection of riprap. Purpose of site inspection was to observe the condition and effectiveness of the riprap cover that was placed at the site in order to contain potential unexploded ordnance (UXO) items, such as WWI Stokes mortars and rifle grenades. Additionally, warning signs were inspected for any degradation.

RESULTS OF QA INSPECTIONS AND TESTS, DEFICIENCIES OBSERVED, ACTIONS TAKEN AND CORRECTIVE ACTION OF CONTRACTOR. INCLUDE COMMENT PERTAINING TO CONTRACTORS CQC ACTIVITIES

- Observed the riprap cover and warning signs to be in good condition.
- Observed no obvious degradation or undercutting of the riprap.
- Observed additional siltation and continued tree growth on top of riprap, since last inspection of December 9, 2004.
- Observed no UXO or ordnance items of any kind.
- Observed a wooden cover over the square opening that was observed during last year's inspection. During last year's inspection, the team discovered a hole that appeared to be two to three feet in depth. The hole was a sewer access opening that had been uncovered by the St. Louis District contractor back in October 2004 as a result of the Corps' agreement with MSD to re-work riprap in order to facilitate easier access to the sewer line for inspection purposes. George Tyhurst had arranged for MSD personnel to cover the hole after last year's inspection.

VERBAL INSTRUCTIONS GIVEN TO CONTRACTOR. *(Include names, reaction, remarks)*

- NA

CONTROVERSIAL MATTERS IN DETAIL

- NONE.

INFORMATION, INSTRUCTIONS OR ACTIONS TAKEN NOT COVERED IN QCR REPORT OR DISAGREEMENTS

- NONE.

REMARKS *(Include visitors to project and miscellaneous remarks pertinent to work)*

- George Tyhurst and Mike Stewart agreed to notify the Corps (Josephine Newton-Lund) prior to the development of MSD plans to perform the sewer line work near the riprap. When MSD performs this work, the Corps will provide ordnance oversight of construction activities.

SAFETY *(Include any infractions of approved safety plan, safety manual or instructions from Government personnel. Specify corrective action taken.)*

- No safety infractions or injuries occurred during site inspection.

INSPECTOR'S SIGNATURE	DATE	SUPERVISOR'S INITIALS	DATE
Josephine Newton-Lund	11/29/2005		

<b>INSPECTORS QUALITY ASSURANCE REPORT (QAR)</b>  <i>(ER 1180-1-6)</i>						THE QCR WILL BE ATTACHED TO OR FILED WITH THE QAR			
						REPORT NUMBER: 4- 112806			
TO: Mitch Scherzinger, MDNR and Diana Bailey, EPA						DATE: November 28, 2006			
<b>PROJECT: Former Jefferson Barracks Post Dumping Grounds, St. Louis, MO</b>  <b>Long Term Monitoring – Site Inspection of Riprap</b>						CONTRACT NO: NA			
CONTRACTOR (Or hired labor): NA						WEATHER: Partly Sunny & Warm			
PORTION OF SCHEDULED DAY SUITABLE FOR OPERATIONS						TEMPERATURE			
Structural Excavation	Borrow Excavation	Embankment	Concrete	Structure	MINIMUM 57		MAXIMUM 68		
HAS ANYTHING DEVELOPED ON THE WORK WHICH MIGHT  LEAD TO A CHANGE ORDER OR FINDING OF FACT? <div style="float: right;"> <input type="checkbox"/> NO    <input type="checkbox"/> YES (Explain)         </div>						24 HOUR PRECIPITATION			
						INCHES 0		ENDING .0	
NUMBER OF FEDERAL GOVERNMENT EMPLOYEES						RIVER STAGE			
SUPERVISORY	OFFICE	LAYOUT	INSPECTION 4	TOTAL 4	LABOR	FEET    N/A -1.80		TIME 1:00PM	
NUMBER OF NON- FEDERAL GOVERNMENT EMPLOYEES				NUMBER OF SHIFTS <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3					
SUPERVISION 3	SKILLED	LABORERS	TOTAL 3	FROM 1300	TO 1530	FROM	TO	FROM	TO
Attach list of the following if applicable: (a) Major items of equipment either idle or working, and (b) Number and classification of contractor or Government personnel onsite. Note: If the contractor's Quality Control Report (QCR) contains the information it need not be repeated.									
<b>INSPECTION PARTICIPANTS</b>  <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;">           a. Art Schuermann, MO Air National Guard            b. Mitch Scherzinger, MO Department of Natural Resources            c. George Tyhurst, Metropolitan Sewer District (MSD)            d. John Shrewsberry, Metropolitan Sewer District (MSD)         </div> <div style="width: 48%;">           e. Gregg Kocher, St. Louis District (Ordnance and Technical Services)            f. Bob Finneran, Kansas City District (Levee Inspector)            g. Josephine Newton-Lund, Kansas City District (PM)            h.         </div> </div>									
<b>WORK PERFORMED TODAY</b> <i>(Indicate location and description of work performed. Refer to work performed by prime and/or subcontractors by letter in Table above, if applicable:</i>  <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;">           a. Site Inspection of riprap and warning signs by USACE, MOANG and MDNR            b.            c.            d.         </div> <div style="width: 48%;">           e.            f.            g.            h.         </div> </div>									
Days of no work and reasons for same: NA									

Information on progress of work, causes for delays and extent of delays, Plant, material, etc.

Equipment List: NONE

ENG FORM 2538-2 R, May 94 (CIVIL)

Page 1 of 2

CQC INSPECTION PHASES ATTENDED AND INSTRUCTIONS GIVEN

- 1) Prior to the inspection, all participants introduced themselves. Additionally, a discussion regarding upcoming sewer work by MSD followed. George Tyhurst and John Shrewsberry presented information regarding a future MSD project located in the Jefferson Barracks riprap area. At last year's inspection, this project did not have a name and was not funded. This project is named, CSO- Interceptor and Outfall Modification (J.B. Outfall L152) and will involve the replacement of sewer line that runs down from the Jefferson Barracks facility, under the railroad tracks and end just above the southern portion of riprap. This work will include replacement of the sewer outfall. John Shrewsberry will be the project manager for this work which is anticipated to begin in April-May 2007.
- 2) Safety Briefing by Gregg Kocher, St. Louis District. Gregg discussed safety precautions related to slip and fall and potential ordnance encounter during the inspection of riprap.
- 3) Inspection of riprap. Purpose of site inspection was to observe the condition and effectiveness of the riprap cover that was placed at the site in order to contain potential unexploded ordnance (UXO) items, such as WWI Stokes mortars and rifle grenades. Additionally, warning signs were inspected for any degradation.

RESULTS OF QA INSPECTIONS AND TESTS, DEFICIENCIES OBSERVED, ACTIONS TAKEN AND CORRECTIVE ACTION OF CONTRACTOR. INCLUDE COMMENT PERTAINING TO CONTRACTORS CQC ACTIVITIES

- Observed the riprap cover and warning signs to be in generally good condition. Some rock breakage was observed in the Northern riprap area, but not significant to be a concern.
- Observed no significant degradation or undercutting of the riprap.
- Observed additional siltation and continued tree growth on top of riprap, since last inspection of November 17, 2005.
- Observed no UXO or ordnance items of any kind.

VERBAL INSTRUCTIONS GIVEN TO CONTRACTOR. *(Include names, reaction, remarks)*

- NA

CONTROVERSIAL MATTERS IN DETAIL

- NONE.

INFORMATION, INSTRUCTIONS OR ACTIONS TAKEN NOT COVERED IN QCR REPORT OR DISAGREEMENTS

- NONE.

REMARKS *(Include visitors to project and miscellaneous remarks pertinent to work)*

- George Tyhurst and John Shrewsberry agreed to notify the Corps (Josephine Newton-Lund) prior to the sewer line work near the riprap. When MSD performs this work, the Corps will provide ordnance oversight of construction activities. Josephine Newton-Lund agreed to provide MSD ordnance oversight language to be used in their specifications to their contractors (emailed to MSD on 12/1/06). MSD anticipates going out for bid in January 2007. In addition, Josephine Newton-Lund agreed to provide a digital picture of one of the Stokes mortars found at the project site (emailed to MSD on 11/30/06).

SAFETY *(Include any infractions of approved safety plan, safety manual or instructions from Government personnel. Specify corrective action taken.)*

- No safety infractions or injuries occurred during site inspection.

INSPECTOR'S SIGNATURE

DATE

SUPERVISOR'S INITIALS

DATE

Josephine Newton-Lund, PMP

12/8/2006





<b>INSPECTORS QUALITY ASSURANCE REPORT (QAR)</b>  <i>(ER 1180-1-6)</i>						THE QCR WILL BE ATTACHED TO OR FILED WITH THE QAR			
						REPORT NUMBER: 5- 120507			
TO: Mitch Scherzinger, MDNR and Diana Bailey, EPA						DATE: December 5, 2007			
<b>PROJECT: Former Jefferson Barracks Post Dumping Grounds, St. Louis, MO</b>  <b>Long Term Monitoring – Site Inspection of Riprap</b>						CONTRACT NO: NA			
CONTRACTOR (Or hired labor): NA						WEATHER: Cloudy, Windy and a trace of precipitation			
PORTION OF SCHEDULED DAY SUITABLE FOR OPERATIONS						TEMPERATURE			
Structural Excavation	Borrow Excavation	Embankment	Concrete	Structure	MINIMUM 27		MAXIMUM 49		
HAS ANYTHING DEVELOPED ON THE WORK WHICH MIGHT  LEAD TO A CHANGE ORDER OR FINDING OF FACT? <div style="float: right;"> <input type="checkbox"/> NO    <input type="checkbox"/> YES (Explain)         </div>						24 HOUR PRECIPITATION			
						INCHES 0		ENDING .0	
NUMBER OF FEDERAL GOVERNMENT EMPLOYEES						RIVER STAGE			
SUPERVISORY	OFFICE	LAYOUT	INSPECTION 2	TOTAL 2	LABOR	FEET    N/A .48		TIME 1:00PM	
NUMBER OF NON- FEDERAL GOVERNMENT EMPLOYEES				NUMBER OF SHIFTS					
				<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3					
SUPERVISION 5	SKILLED	LABORERS	TOTAL 5	FROM 1300	TO 1430	FROM	TO	FROM	TO
Attach list of the following if applicable: (a) Major items of equipment either idle or working, and (b) Number and classification of contractor or Government personnel onsite. Note: If the contractor's Quality Control Report (QCR) contains the information it need not be repeated.									
<b>INSPECTION PARTICIPANTS</b>  <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;">           a. Art Schuermann, MO Air National Guard            b. Mitch Scherzinger, MO Department of Natural Resources            c. George Tyhurst, Metropolitan Sewer District (MSD)            d. John Shrewsbury, Metropolitan Sewer District (MSD)         </div> <div style="width: 50%;">           e. Robert Miller, Metropolitan Sewer District (MSD)            f. Randy Fraser, St. Louis District (Ordnance and Technical Services)            g. Josephine Newton-Lund, Kansas City District (PM)            h.         </div> </div>									
<b>WORK PERFORMED TODAY</b> <i>(Indicate location and description of work performed. Refer to work performed by prime and/or subcontractors by letter in Table above, if applicable:</i>  <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;">           a. Site Inspection of riprap and warning signs by USACE, MOANG and MDNR            b.            c.            d.         </div> <div style="width: 50%;">           e.            f.            g.            h.         </div> </div>									
Days of no work and reasons for same: NA									

Information on progress of work, causes for delays and extent of delays, Plant, material, etc.

Equipment List: NONE

ENG FORM 2538-2 R, May 94 (CIVIL)

Page 1 of 2

CQC INSPECTION PHASES ATTENDED AND INSTRUCTIONS GIVEN

- 1) Prior to the inspection by Art Schermann, Mitch Scherzinger, Randy Fraser and myself, a safety briefing was given by Randy Fraser.
- 2) Inspection of riprap. Purpose of site inspection was to observe the condition and effectiveness of the riprap cover that was placed at the site in order to contain potential unexploded ordnance (UXO) items, such as WWI Stokes mortars and rifle grenades. Additionally, warning signs were inspected for any degradation.
- 3) After the site inspection, the team joined representatives from the Metropolitan Sewer District (MSD) to discuss future sewer line improvements on the Jefferson Barracks property. This meeting was held in a conference room at the Missouri Air National Guard office.

RESULTS OF QA INSPECTIONS AND TESTS, DEFICIENCIES OBSERVED, ACTIONS TAKEN AND CORRECTIVE ACTION OF CONTRACTOR. INCLUDE COMMENT PERTAINING TO CONTRACTORS CQC ACTIVITIES

- Observed the riprap cover and warning signs to be in generally good condition.
- Observed no significant degradation or undercutting of the riprap.
- Observed additional siltation and continued tree growth on top of riprap, since last inspection of November 28, 2006.
- Observed no UXO or ordnance items of any kind.
- MSD representatives discussed the impending sewer project identified as J.B. Outfall L152 Replacement. This work will involve the replacement of sewer line that runs down the from the Jefferson Barracks facility, under the railroad tracks and end just above the southern portion of riprap. This work will include replacement of the sewer outfall. MSD anticipates award of a contractor after the first of the year and the work to begin in Spring 2008.

VERBAL INSTRUCTIONS GIVEN TO CONTRACTOR. *(Include names, reaction, remarks)*

- NA

CONTROVERSIAL MATTERS IN DETAIL

- NONE.

INFORMATION, INSTRUCTIONS OR ACTIONS TAKEN NOT COVERED IN QCR REPORT OR DISAGREEMENTS

- NONE.

REMARKS *(Include visitors to project and miscellaneous remarks pertinent to work)*

- I agreed to contact John Shrewsbury after the first of the year to check on the status of the J.B. Outfall L152 Replacement contract award. In addition, I agreed to coordinate ordnance oversight during the sewer construction work utilizing St. Louis District ordnance safety staff.

SAFETY *(Include any infractions of approved safety plan, safety manual or instructions from Government personnel. Specify corrective action taken.)*

- No safety infractions or injuries occurred during site inspection.

INSPECTOR'S SIGNATURE

DATE

SUPERVISOR'S INITIALS

DATE

Josephine Newton-Lund, PMP

12/17/2007

Reverse of ENG FORM 2538-2 R, May94 (CIVIL)

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INSPECTORS QUALITY ASSURANCE REPORT (QAR)						THE QCR WILL BE ATTACHED TO OR FILED WITH THE QAR									
(ER 1180-1-6)						REPORT NUMBER: 6- 120208									
TO: Mitch Scherzinger, MDNR and Diana Bailey, EPA						DATE: December 2, 2008									
PROJECT: <b>Former Jefferson Barracks Post Dumping Grounds, St. Louis, MO</b> <b>Long Term Monitoring – Site Inspection of Riprap</b>						CONTRACT NO: NA									
CONTRACTOR (Or hired labor): NA						WEATHER: Cloudy, Windy and a trace of precipitation									
PORTION OF SCHEDULED DAY SUITABLE FOR OPERATIONS						TEMPERATURE									
Structural Excavation		Borrow Excavation		Embankment		Concrete		Structure		MINIMUM 25		MAXIMUM 48			
HAS ANYTHING DEVELOPED ON THE WORK WHICH MIGHT  LEAD TO A CHANGE ORDER OR FINDING OF FACT? <input type="checkbox"/> NO <input type="checkbox"/> YES (Explain)										24 HOUR PRECIPITATION					
										INCHES 0		ENDING .0			
NUMBER OF FEDERAL GOVERNMENT EMPLOYEES										RIVER STAGE					
SUPERVISORY		OFFICE		LAYOUT		INSPECTION 3		TOTAL 3		LABOR		FEET N/A 2.73		TIME 1:00PM	
NUMBER OF NON- FEDERAL GOVERNMENT EMPLOYEES						NUMBER OF SHIFTS <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3									
SUPERVISION 4		SKILLED		LABORERS		TOTAL 4		FROM 1300		TO 1430		FROM		TO	
												FROM		TO	
Attach list of the following if applicable: (a) Major items of equipment either idle or working, and (b) Number and classification of contractor or Government personnel onsite. Note: If the contractor's Quality Control Report (QCR) contains the information it need not be repeated.															
INSPECTION PARTICIPANTS															
a. Art Schuermann, MO Air National Guard							e. Clint Sperry, EPA Region 7 (RPM)								
b. Mitch Scherzinger, MO Department of Natural Resources							f. George Sloan, St. Louis District (Ordnance and Technical Services)								
c. George Tyhurst, Metropolitan Sewer District (MSD)							g. Josephine Newton-Lund, Kansas City District (PM)								
d. John Shrewsbury, Metropolitan Sewer District (MSD)							h.								
WORK PERFORMED TODAY (Indicate location and description of work performed. Refer to work performed by prime and/or subcontractors by letter in Table above, if applicable:															
a. Site Inspection of riprap and warning signs by USACE, MOANG, MDNR and EPA							e.								
b.							f.								
c.							g.								
d.							h.								
Days of no work and reasons for same: NA															

Information on progress of work, causes for delays and extent of delays, Plant, material, etc.

Equipment List: NONE

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CQC INSPECTION PHASES ATTENDED AND INSTRUCTIONS GIVEN

- 1) Prior to the inspection, a safety briefing was given by George Sloan.
- 2) Inspection of riprap. Purpose of site inspection was to observe the condition and effectiveness of the riprap cover that was placed at the site in order to contain potential unexploded ordnance (UXO) items, such as WWI Stokes mortars and rifle grenades. Additionally, warning signs were inspected for any damage.

RESULTS OF QA INSPECTIONS AND TESTS, DEFICIENCIES OBSERVED, ACTIONS TAKEN AND CORRECTIVE ACTION OF CONTRACTOR. INCLUDE COMMENT PERTAINING TO CONTRACTORS CQC ACTIVITIES

- Observed the riprap cover and all but one warning sign to be in generally good condition. A warning sign adjacent to the newly installed sewer line and manhole was observed to be severely damaged.
- Observed no significant degradation or undercutting of the riprap. However, some minor undercutting of riprap was observed along the shoreline located in the northern portion.
- Observed additional siltation and continued tree growth on top of riprap, since last inspection of December 5, 2007.
- Observed no UXO or ordnance items of any kind.
- Observed newly installed manhole and riprap restoration along the path of the newly installed 54" sewer line. Additional riprap was placed on top of the newly installed sewer line and around the new manhole.
- MSD officials observed that the CSO (Combined Sewer Overflow) sign was missing.

ACTIONS TO BE TAKEN:

1. Art Schuermann will arrange for the replacement of the damaged UXO warning sign.
2. Josephine Newton-Lund and Art Schuermann agreed to closely monitor the potential for future undercutting of riprap along the shoreline.
3. John Shrewsbury and George Tyhurst agreed to replace the missing CSO sign.
4. In response to a question asked by Clint Sperry in regard to the Military Munitions Response Program (MMRP) Site Inspection (SI) priority list, Josephine Newton-Lund agreed to find out when the compilation of the list will be completed and reported to Congress.
5. Josephine Newton-Lund will begin preparation of a draft 5-year review report for the project site (Jefferson Barracks Former Dumping Grounds) after the first of the year in anticipation of EPA's approval by 30 June 2009.

VERBAL INSTRUCTIONS GIVEN TO CONTRACTOR. *(Include names, reaction, remarks)*

- NA

CONTROVERSIAL MATTERS IN DETAIL

- NONE.

INFORMATION, INSTRUCTIONS OR ACTIONS TAKEN NOT COVERED IN QCR REPORT OR DISAGREEMENTS

- NONE.

REMARKS *(Include visitors to project and miscellaneous remarks pertinent to work)*

SAFETY *(Include any infractions of approved safety plan, safety manual or instructions from Government personnel. Specify corrective action taken.)*

- No safety infractions or injuries occurred during site inspection.

INSPECTOR'S SIGNATURE	DATE	SUPERVISOR'S INITIALS	DATE
Josephine Newton-Lund, PMP	1/6/2009		

## **Attachment 10**

### **List of Documents Reviewed Former Jefferson Barracks Post Dumping Grounds**

Restrictive Covenant and Grant of Easement, Jefferson Barracks, Recorder of Deeds, St. Louis County, Missouri, 2004

Quality Assurance Reports for the Former Jefferson Barracks Post Dumping Grounds, U.S. Army Corps of Engineers, Kansas City District, 2003-2008

Close out letter, former Jefferson Barracks Post Dumping Grounds, U.S Army Corps of Engineers, Kansas City District, 2003

Memorandum of Agreement (MOA) between USACE and MOANG, former Jefferson Barracks Post Dumping Grounds, 2001

Action Memorandum for the former Jefferson Barracks Post Dumping Grounds, 1998

Engineering Evaluation/Cost Analysis (EE/CA) for the former Jefferson Barracks Post Dumping Grounds, 1998

Time Critical Removal Action Specifications, Jefferson Barracks, U.S. Army Engineering and Support Center, Huntsville, 1997

Final Environmental Baseline Survey, Jefferson Barracks Air National Guard Station, St. Louis, Missouri, Air National Guard Readiness Center, 1996

Archives Search Report (ASR) for the former Jefferson Barracks Post Dumping Grounds, 1994

Inventory Project Report (INPR) for the former Jefferson Barracks Post Dumping Grounds, 1990

Quitclaim Deed, Office of the Adjutant General, Jefferson City, MO, 1950